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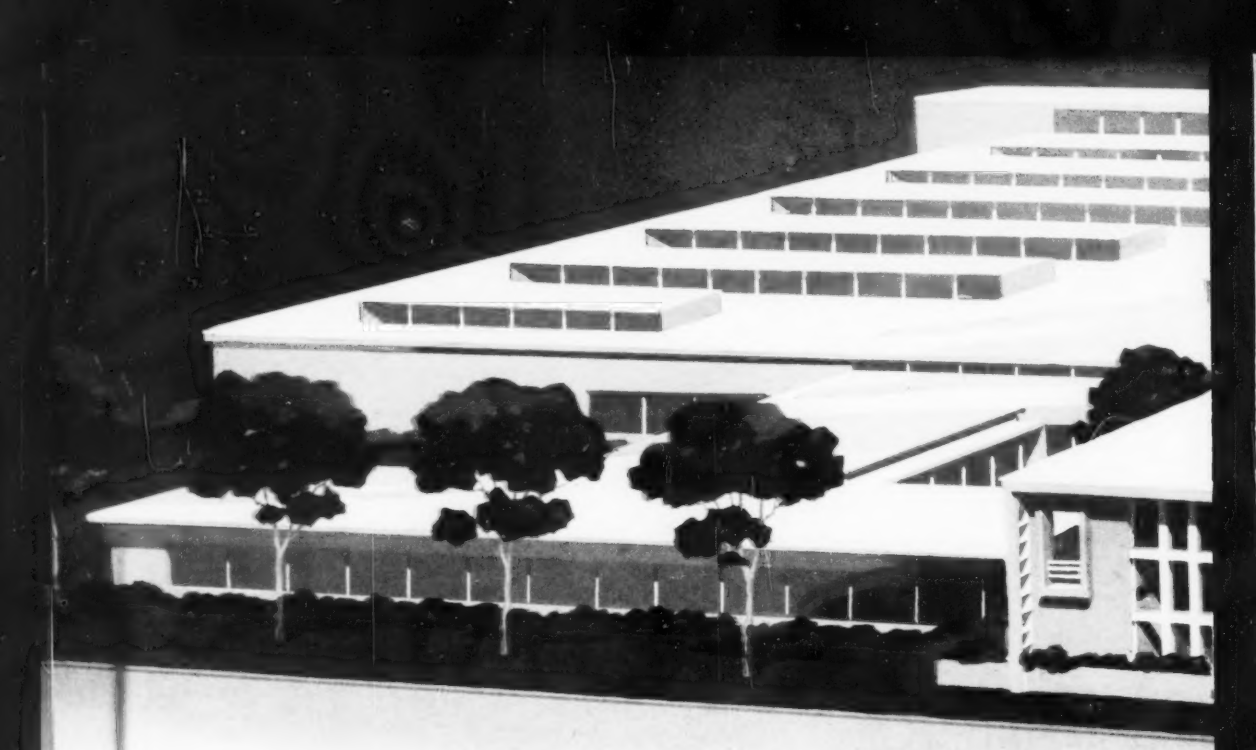

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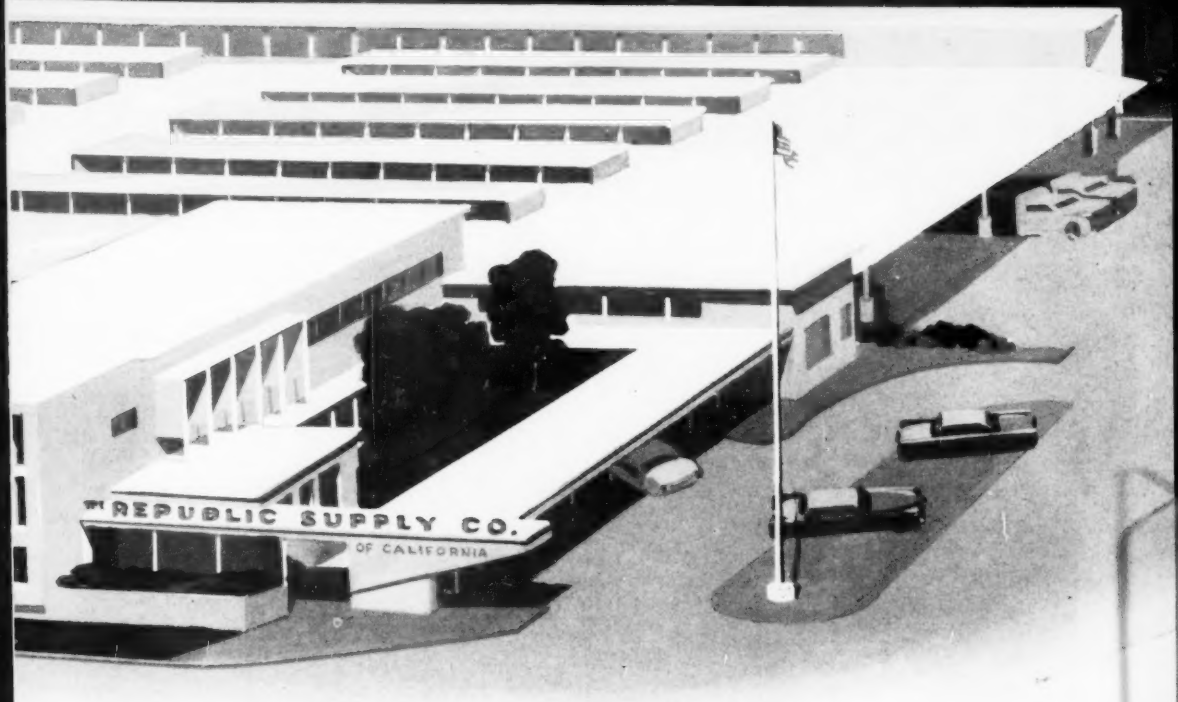

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Dear Sir:

In your publication of October, 1948, and also three months later in the "California Mining Journal" of January, 1949, I note the following paragraph:

"E. N. Pennebaker, Consulting Geologist, Consolidated Coppermines Corp., spoke on the Southwestern United States and cited the 900,000,000 tons of copper ore within a radius of 25 miles of Globe, Arizona."

This is word for word at both times. Furthermore, adding insult to injury, the "California Mining Journal" states that it is the first to give space to the item of adding to ore reserves. The MINING WORLD had its release out three months before it was copied in the "California Mining Journal." I noted that the editor got a lot of other stuff from you almost word for word but with this important difference. Whereas you apparently believe with Abraham Lincoln that you should "Stand with a man that is right, as long as he is right, and part with him when he is wrong," he differs.

In the same issue of the "California Mining Journal," the editor of the "California Mining Journal" speaks on page 25 of a man who has "just heard from Grand Junction that the A. E. C. buys ores on the Geiger Count only, without a wet analysis, which he states is unfair to the miner, as 'there are many minerals of the uranium group that do not throw a gamma ray.'"

The ores are **not** bought on Geiger tests, and if there is a single natural uranium numeral which does not respond to the Geiger Counter, I will pay $1,000 for the first pound discovered!

Yours truly,
John Herman,
Assayer and Chemist
920 Santee Street,
Los Angeles, California

A Tribute to Col. Jackling

Dear Sir:

I read with interest your editorial on Taconites in the August MINING WORLD. You were quite right, the work by Erie Mining Company unit of Pickands Mather not only proves Taconites are here, but they are competitive with underground ore and are the answer to the future of iron ore supply in the United States.

I visited the Erie unit in September. Even with a small unit operation and "bugs" inherent in breaking in the new plant, the operation was a technical success.

The failure of Mesabi Iron pioneer effort in the early 20's was due to several factors: (1) lack of suitable rig to drill the hard taconite rock; (2) lack of understanding by steel industry that the Mesabi product sinter was not only a highly desirable one, superior to ordinary iron ore, for both blast furnaces and open hearths, but also worth a premium price. The flow sheet of Mesabi of 25 years ago devised by Col. Jackling is the same as that used by Erie today, except technical progress in crushing and magnetic concentration give far higher extractions and much lower costs.

Probably the most helpful technical factor in the immediate taconite development is the jet piercing drilling by Linde Air Products. Recent improvements in technique have increased the speed in drilling from 10 to over 30 feet per hour, with overage in 6-inch hole up to 50 percent, making hole equivalent to 9-inch diameter one in volume. This figure of 30 feet per hour compares with 18 feet per shift with a standard rig, using special chrome steel bits. In blasting, there has been excellent fragmentation of the blast due to the incipient cracks in the rock surrounding the holes and this fragmentation obviates secondary blasting to a large extent. Cost figures per drilling 6-inch holes are as yet incomplete but it is estimated $3 per foot will be maximum.

Since holes in taconite blasting must be loaded heavy, probably to very top, to insure maximum fragmentation with minimum of bouldering effect, liquid oxygen equivalent to 70 percent powder could be an excellent alternative to straight dynamite and thus save considerable time in loading. Liquid oxygen is equivalent in price to 17c per lb.—70 percent powder.

Based on present prices of 70 percent powder, $3 per foot drilling, and 7c per ton loading from pit floor to cars, I have estimated straight mining costs of Mesabi Iron Company taconites (stripping here negligible) at 17c per ton.

The United States future iron ore supply is thus a reality today and is indeed a fitting tribute to the genius and foresight of Colonel Jackling.

Yours very truly,
Robert D. Hoffman,
Mining Geologist
452 Fifth Avenue,
New York 18, N. Y.

Flowsheets and Claim Maps

Dear Sir:

Would not the so-called flowsheet of the Southern Phosphate Company's plant look more in place as the claim map of the San Francisco Mining District, Beaver County, Utah, as on page 40 of the March, 1947, issue of MINING WORLD?

The article accompanying the plat was very good, instructive and, for comparison, why not give us prospectors more like it? I am interested, for I am prospecting and digging on a somewhat similar deposit in Idaho. You have no idea of how it helps a fellow to dig.

Your editorial on the Secretary of Mineral Resources is good and to the point. Hammer that idea for all it is worth. Put men into key positions to help the country instead of designating a horde of political appointees to rule us by their directives instead of law.

Yours very truly,
Herbert H. Hackett,
Council, Idaho

Silver Belt and Dry Belt

Dear Sir:

I found the special envelope along with your subscription data, so I am prompted to tell you that I enjoy reading your magazine. It is really a **western** mining magazine.

Speaking from the standpoint of a geologist who has worked with the Hecla Mining Company for a few years, I would like to mention that **Silver Belt** is more correct usage **now** for **Dry Belt.** The words **dry belt** were used by Neyman and Lottridge in their shaft-sinking article (Dec. 1948 MINING WORLD). The term "Dry Belt" was applicable for years because the ore was "dry smelting" (little or no base metal in the ore to aid the smelter in extracting the silver). After the discovery of the Chester orebody by Polaris-Sunshine on the Sunshine 2,700' level in 1943, the term "Silver Belt" was established by the geologists because of the new discovery of ore containing base metal (lead). The area no longer is without "dry smelting ore," so it may more correctly be called Silver Belt.

Very truly yours,
Philip Lindstrom,
Burke Idaho

Humphreys Spirals in 1948

Dear Sir:

You requested some notes on the progress and results of the Humphreys spiral concentrators during 1948. We offer the following comment:

"On the Mesabi Range The Cleveland-Cliffs Iron Company operated 84 spirals, treating 100 tons per hour jig-type ore, at Hill-Trumbaull Mine and 14 spirals in a pilot plant, treating about 12 tons per hour wash ores in three stages at Holman-Cliffs Mine. The company this winter is adding 20 spirals in Hill-Trumbull plant and installing a spiral plant at Holman-Cliffs Mine.

The Butler Brothers treated 25 tons per hour wash ores in pilot plant tests using spirals in three stages.

Pacific Isle Mining Company is installing 25 spirals this winter to treat about 30 tons jig-type and wash ores per hour.

Jones & Laughlin Steel Corporation, Benson Mines, New York, treated 18 to 20 tons per hour magnetite-martite fine ore in a 24-spiral, 3-stage pilot plant.

Climax-Molybdenum Company operated 128 spirals, treating about 5,000 tons per day classifier product from minus 48 mesh molybdenum flotation tailing for recovery of tungsten concentrate.

International Minerals & Chemical Corporation operated 154 spirals at Achan, Florida, and 88 spirals at Noralyn, Florida, plants on phosphate fines.

Calco Chemical Division, American Cyanamid Company, Piney River, Virginia, is installing 21 spirals in two stages for preconcentration of ilmenite ore before flotation.

Humphreys Gold Corporation operated for fifth consecutive year its spiral plant near Jacksonville, Florida, now using 352 spirals for recovery of ilmenite, rutile and zircon from about 7,500 tons of sand daily. The same company expects to commence operations early in 1949 of its new plant at Trail Ridge, near Starke, Florida, to treat about 25,000 tons of sand daily for recovery of titanium minerals, using 1,004 spirals mounted on two barges floating in the dredge pond. One hundred sixteen additional spirals will be used for recovery of zircon from the titanium plant tailing.

Four spirals have been installed by Turk-Maadin-Sirketi at its Kavak Mine in Turkey for recovery of approximately 20,000 tons of chromite concentrate per year. Cyprus Chrome Company Limited is installing four spirals for similar use.

The Hudson Coal Company operated its 48-spiral cleaning plant for the second year and is installing another plant of 40 spirals for recovery of boiler fuel from anthracite silt."

We trust these comments will be of benefit to you.

Yours very truly,
Edward Lee Dailey,
The Humphreys Investment Company
Denver, Colorado

More letters on page 26

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A Miller Freeman Publication

Published monthly except in April when publication is semi-monthly

MARCH, 1949

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PUBLISHING OFFICE
San Francisco 5, Calif. ..... 121 Second Street
GArfield 1-5887

BRANCH OFFICES
Seattle 4, Wash. ..... 71 Columbia St., MAin 1626
Los Angeles 13, Calif. ..... 124 W. Fourth St., MUtual 8196
Vancouver, B. C. ..... Royal Bank Bldg., MArine 1520
New York 17 ..... 370 Lexington Ave., Murray-Hill 3-9295
Chicago ..... 4556 N. Paulina, SUnnyside 4-6558

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GENERAL MANAGER, San Francisco ..... M. F. HOLSINGER
EDITOR, San Francisco ..... JOHN B. DORSH
ASSOCIATE EDITOR, Vancouver ..... CHARLES L. SHAW
NORTHWEST MANAGER ..... MILLER FREEMAN, JR.
PRODUCTION MANAGER ..... E. B. HERINGTON
EASTERN MANAGER ..... KAREL WEGKAMP

Published by
AMERICAN TRADE JOURNALS, INC.
MILLER FREEMAN, President
L. K. SMITH, Vice-President
W. B. FREEMAN, Publisher

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SUBSCRIPTION RATES

U.S., North, South and Central American Countries $3.00
Other Countries $4.00
Single Copies $0.35
Directory Number $2.00

DRIFTS AND CROSSCUTS

By Charles F. Willis

Manganese, the Essential

A short time ago a report was headlined in the eastern newspapers, and featured by news commentators on the radio, that Russia was going to stop manganese shipments to the United States. The obvious intent of any such action would be to cripple the steel industry of this country and, by so doing, curtail our national security program and put a stop to the Marshall Plan and our aid for the rehabilitation of European countries.

While the State Department has denied the report that Russia has stopped manganese shipments to the United States and a statement was issued that there is no evidence in Washington that Russia has any intention of doing so, it is a mighty serious thing when any foreign country—particularly a potential enemy—has the power to do what this action would do. It is a terrific hazard which can—and should—be removed.

There is no question but that, if she wishes, Russia could seriously cripple the United States steel industry, for 47 percent of the manganese used in the United States comes from Russia, produced largely by prisoner and slave labor. The United States produces only 3 percent of its own requirements. The balance comes from low-wage mines in Africa, India, and South America. Experience during the early days of World War II showed that most of the bottoms from South America and Africa carrying manganese never did reach this country. We are sacrificing security for the ability to buy a cheaper product.

The very fact that Russia—or any other foreign country—has us so completely in her power as to an essential raw material should be a tremendously potent argument for an incentive program to encourage and open up new mining in the United States for metals and minerals essential to our national security. While the Russians may not have any such plan in mind at the moment, they undoubtedly know that they can cripple our economy any time they wish; and, if it fits their program, they would do so. While this particular threat centers around manganese, it is equally important in varying degrees as to other minerals and metals. Congress should recognize the hazard quickly and make plans to eliminate it.

New Tax Structure Needed for Mines

Secretary of the Interior Julius A. Krug is expected to back the mining industry's appeal for specific tax relief to encourage a more comprehensive program of exploration for and development of the strategic metals and minerals so essential to national security and domestic welfare. There is a tremendous scarcity of strategic metals and minerals, both for stockpiling and for current industrial demand. The Interior Secretary, as well as Director James Boyd of the Bureau of Mines, was urged to take this step by the National Minerals Advisory Council which met recently in Washington.

The council (which was appointed by Secretary Krug to advise on government policy pertaining to mining) stated that the present federal tax laws make the development of new mines very unattractive. The risk is large and the returns, after taxes, are too small even when the venture is successful. What little venture money there is will seek something with a reward more in line with the risk.

The National Minerals Advisory Council specifically recommended: (1) Income tax exemption for the first three to five years of commercial operation of a mine;

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(2) Substantial increases in the percentage of income exempted from taxes to allow for mine depletion; (3) Increased allowances for mine depreciation; (4) Tax exemption for reserves set aside for exploration and development; and (5) Considerable liberalization of tax laws governing expenses incurred in the exploration and development of mines.

Charles F. Willis

Forgotten Men of the Industry

No class of men associated with the mining industry has contributed more to its present transitory mechanization—transitory in the sense that greater developments are always in the offing—than the manufacturers who supply the tools, safety appliances, equipment, machinery, explosives, and other supplies, but seldom do they receive a pat on the back or a word of praise for a job well done.

Credit for the steadily increased per man-day output must be shared, and shared generously, with the men who make up the rank and file of this segment of the industry. Perhaps the manufacturers and machinery men have been hiding their light under a bushel and, if so, it is time to bring the light into the open.

The first thing is to disabuse the general public of a rather fixed idea that any person selling or servicing machinery is cast in the mold of the old-time drummer or knight of the grip. No similarity between the two exists. The old-time traveling salesman was, in large degree, a man of little or no education or refinement and held onto his job largely by a combination of a glib tongue and a huge and well varied repertoire of stories. The sales agent and service man representing the machinery companies of today is a man from another world. Generally he is a graduate of a mining school, has been a success as an operator, is well versed in not one but several phases of the industry, and is a top-notch consultant in his particular field. His opinion is sought and respected and his recommendations are speedily put into practice.

The wonders of mechanization had their beginnings in the minerals industry. The mines were the proving grounds of machines that later found their way into the factories as the first application of the steam engine, about 1760, was to pump water from mines and steam hoisting engines followed later.

The first industry to make use of power-driven machinery, the mining industry began the era that became known as the Industrial Revolution. Always in the lead, the industry will continue to make great advances in cutting costs and reducing the outlay of manpower by advancing mechanization in the various phases of mineral extraction.

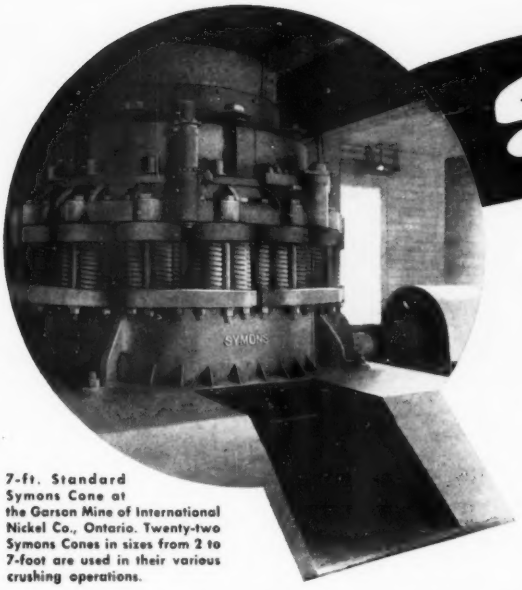
Many mining machines have no counterpart in other industries. A great percentage of the machines are of special design and the industry is continuously forcing innovations onto the so-called standard equipment as changes are made in machinery that has to be varied from mine to mine.

Inasmuch as many mining machines are manufactured in relatively small quantities, the repetitive operations of assembly-line plants are largely eliminated. Manufacturers can avail themselves only rarely of special-purpose machine tools or assembly lines for putting machines together. Mining and milling machinery, generally custom made, is inclined to be relatively expensive to manufacture and assemble and large sums sometimes are spent in developing new processes and machines.

Machinery manufacturers and their engineers are directly responsible by their developments in contributing to the advancement in the production of minerals. The cooperation existing between those who make and use powder, caps, rock drills, pumps, fans, loaders, scrapers, safety appliances, and other supplies is one of the outstanding features of the American mining industry as the teamwork existing is something about which the visitor from abroad always marvels.

—J. B. D.

Symons CONE CRUSHERS



7-ft. Standard Symons Cone at the Garson Mine of International Nickel Co., Ontario. Twenty-two Symons Cones in sizes from 2 to 7-foot are used in their various crushing operations.

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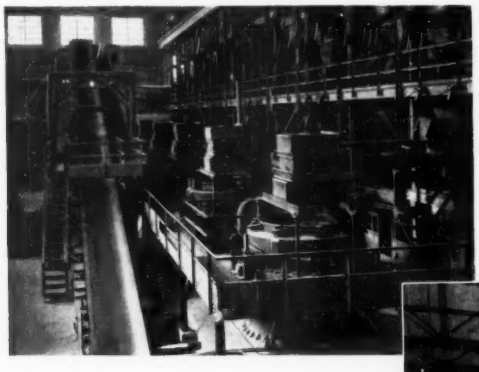
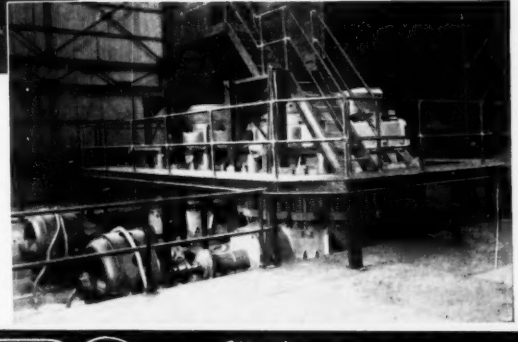


Showing five of the ten 7-ft. Standards and 7-ft. Short Heads installed at the Climax Molybdenum Co., Climax, Colorado.



Homestake Mining Co. of South Dakota uses these two 7-ft. Standard Cone Crushers in gold mining operation.

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CAPITOL CONCENTRATES

How Much Material Has Actually Been Delivered to U. S. Stockpiles?

It is almost ludicrous the way the Munitions Board is trying to justify itself and to make a good showing to the House and Senate Appropriations Committee by means of favorable sounding publicity. The latter part of January Donald F. Carpenter, chairman of the board, gave a press interview which resulted in the headline, "Thirty-nine Per Cent of Goal Reached." Of course there was little intimation of the goal, excepting dollarwise.

A careful reading of the interview brought forth this gem: "*When* these supplies are delivered, the national stockpile will be up to 39 percent of its planned size." Also, "Materials costing $1,446,000,000 have been stockpiled at military depots throughout the country or have been earmarked for purchase." (Italics ours.)

Congress may well ask how much of this material was merely transferred from other government agencies, how much was actually bought and delivered, and of the remainder on long-term contracts (particularly foreign contracts) how much real delivery may be expected with or without an intervening war?

Apparently the board has spent or committed all its funds so it can go to Congress for its 1949 budget with a bare exchequer. What Congress would like to know, judging from the comments of committee members during the House Public Lands Stockpile hearings held last May, is how much actual material is in the stockpiles? The board stated last year that it planned to buy 30,000 tons of copper, 16,000 tons of lead and 16,000 tons of zinc, among other things. Additional stockpile requirements for copper, as of January 1, 1948, were estimated by the House Public Lands Committee as 6,700,000 short tons. A little short division will show how long it would take to accumulate so much copper at the rate of 30,000 tons a year if this purchase figure is correctly quoted. No doubt lead and zinc are in a similar situation. All does not seem to be well.

● *What Guarantees Were Meant?*

There seems to be a great deal of confusion over certain parts of the President's remarks about guarantees for foreign investments. Some have interpreted his meaning to be that American capital placed abroad, especially for the production of strategic and critical minerals and metals, must be guaranteed from loss. Others think that guarantees against expropriation were meant.

Whether guarantees against expropriation are practical is a question, but certainly such would not prevent the loss of the output resulting from the investment and, after all, it is the material that we need so badly. Nor could there be any guarantee against seizure by an enemy cutting off our supplies while filling his own bins, literally at our expense.

Money guarantees, yes. Guarantees against loss of the product, no! The best protection is full domestic production even if it is not a 100 percent answer.

● *Engle Heads Mining Subcommittee*

General approval is expressed over the selection of Representative Clair Engle of California to head the Mining Subcommittee of the House Public Lands Committee. Engle has become the outstanding proponent of legislation designed to help the domestic mining industry and is the author of many of the important bills now pending and co-sponsor of others. Active hearings on mining bills may be expected, and it is certain that Engle will give sympathetic attention to the testimony of small and marginal mine operators or their representatives. Incentive payments, contract settlement for miners and free trading in gold are among Representative Engle's principal interests. The mining industry is, indeed, lucky in this choice.

Senator O'Mahoney of Wyoming, chairman of the Senate Committee on Interior and Insular Affairs (which is the opposite number to House Public Lands), has not yet announced the formation of a mining subcommittee.

● *Simplify Patent Procedure*

Complaints continually reach Congress about the difficulty of patenting mining claims. Aside from the tendency of the Bureau of Land Management to co-operate with other agencies in contesting applications for patents, the red tape within the Bureau of Land Management itself is beyond belief. Much of the delay is attributed by the bureau to lack of skilled help, stenographers and clerks to handle the routine mechanics of patenting.

There generally are two ways of curing such delays within a bureau—add to the staff or cut out duplication and red tape. Increases in staff, however, permit the generation of more red tape which requires more help to untie and so on, ad infinitum. The real solution is to simplify procedure.

The Krug Industry Advisory Committee, as the National Minerals Advisory Council is commonly called, should demand a complete route sheet on land patents from the filing of the application to the granting of the patent. Along with this should be a time sheet showing the minimum, average, and maximum number of days consumed by each step. It was by just such an analysis that during the war RFC mine loan procedural time was cut to one-twelfth of the previous requirement. The same thing could be done in the Bureau of Land Management although the time saving might not be so spectacular.

● *President Renames Boyd*

As was expected, the President has again sent up to the Senate for confirmation as director of the Bureau of Mines the name of James Boyd, who has been serving on a no-pay basis because the 80th Congress would not confirm him. An attempt will be made to pass a special bill to pay Boyd for past time, and the measure undoubtedly will go through if he is confirmed by the Senate. If not, the going for such a bill may be tough.

● *Zinc Is Next in Line*

The lead tariff is suspended and the repassage of the copper tariff recess for two years is considered a sure thing. With these as precedents, zinc is almost certain to get the same treatment.

● *Silver Bill Reintroduced*

As is his habit, Representative Celler of New York has reintroduced his bill to repeal the Silver Purchase Act of 1934 and also another bill to repeal the legislation which raised the price of silver to 90.5 cents an ounce. Such persistence must have a good reason if one looks far enough.

● *Same Plan—Only Different*

Quotes from the Washington press: "There's a $25,000,000 reserve set up under ECA authority for stockpiling. ECA's Strategic Minerals Director Evan Just says we can't get materials without building railroads and repairing mines in some countries. Legislation guaranteeing long-term buying on our part might get private capital interested in developing these areas more extensively."

It is extraordinary how the various programs to expand domestic mining, which have been consistently rejected, are now being recommended for expanding foreign mining—that's a different matter apparently.

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GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK

GM GENERAL MOTORS DIESEL POWER

Left to right: Gold producer and gold Senator. Merrill E. Shoup, president of the Golden Cycle, discusses the yellow metal with Pat McCarran (Dem-Nev), the gold block in the United States Senate. Dr. Ben T. Parker, president, Colorado School of Mines, and James Boyd, director, U. S. Bureau of Mines. Buyer meets seller. Blaine Watts, U. S. Smelting, Refining & Mining Company, reviews the negotiations of contracts with W. H. H. Cranmer, president, New Park Mining Company, one of his best customers. He deals with atomic energy for peace. Fred R. Gruner, mechanical research and development engineer, Allis-Chalmers Manufacturing Company. Bottom row, left to right: Now, then and forever. John Hamm, newly elected president; Robert Palmer, long-time executive secretary; and Judge Ben T. Paxen, retiring president, Colorado Mining Association. One of Colorado's newest developments is the large scale reactivation of the Chain o' Mines at Central City. Chain personnel includes: James C. Prentice, electrician; Dr. Wm. Mark Muchow, president; Eugene W. Ganley, surface foreman, and J. Bardswich, engineer.

FREE GOLD AND THE BOMB

Colorado discusses a free gold market and the position of the uranium miners. Other segments of the industry are in a healthy position

Gold and the atom, those two important factors in world relations, were the central topics around which revolved most of the discussions of the fifty-second annual meeting of the Colorado Mining Association on January 31, and February 1 and 2. The meeting, in Denver, enjoyed near-record attendance.

Accepting that it is the proper function of organizations assembled in such meetings to denounce those in opposition to their aims and decry those things which stand in the way of their rapid development, it was interesting to note that the miners in Denver had to admit that the industry was in a healthy and vigorous condition—a position almost totally foreign to any producing group. Two major exceptions to this vitality were gold miners and uranium miners. Marginal producers of certain base metals also raised a small voice.

Gold, admittedly the stepchild of modern world economics, found many ready champions, including Joseph Stagg Lawrence, Vice President, Empire Trust Company of New York City, and the Honorable Patrick McCarran, United States Senator (Dem.) of Nevada. All speakers, facing sympathetic audiences, were in complete agreement that only one thing was needed—a free gold market. Pat McCarran offered the only concrete evidence of action in the form of a bill (S. 13) which he introduced in the Senate on January 5.

S. 13 would permit the sale of gold within the United States, its territories and possessions, including Alaska, and for other purposes. This bill would permit individuals legally to hold and own gold in any form, without licenses, and to buy or sell, import or export gold, without restriction. It would not require the Treasury to redeem United States paper currency in gold, just as the treasury is not now required to do. The bill would require no positive action by government, would impose no administrative burdens, would create no additional bureaucracy and would require no appropriations. Stripped of all legislative gobbledygook, S. 13 would create a free market for gold—exactly what the gold miners in Denver were demanding.

McCarran warned his listeners that he opposed forcing the Treasury to redeem outstanding paper money in gold because this could result in serious deflation. He also implied that raising the price of gold and forcing Treasury purchase of the metal at an artificially high price would expand the already adequate currency in the country—an inflationary measure. He announced that his bill was for the relief of certain gold mines which were closed under the War Production Board's order L-208. In this session, the bill will be titled S. 45.

A New Approach

While every producer who expressed an opinion favored the same action—a free gold market, Harry Sears, President, Calaveras Central

Gold Mining Co., Angels Camp, California, came forward with the only original thought for securing such action when he claimed flatly that the government was acting without authority when it channeled all newly mined gold into the treasury.

Sears stated, "Gold producers are hampered by regulations dating back to that era when Congress was told to pass laws in spite of doubts as to their validity or constitutionality. If the law did not give its new-deal planners the desired freedom of action this was achieved by a department order, rule or practice, under pretense of authority.

"An essential part of the new-dealers' drive against gold was their claim of exclusive right to control it. They possess no such right. They never had it. Their propaganda over the years, however, has been so effective that even some gold producers do no realize that they are being robbed, and that they have important rights, if they will assert them.

"There is a vast legal difference between newly mined gold, a commodity, and government gold stocks for monetary use."

His point was that the law covered only government gold stocks for monetary use and provided no measure of force for converting newly mined gold to this stock. He pointed out that his own company has insisted upon and enjoyed from the first its right to sell "gold in its natural state" in a free market. The correctness of this position has been reaffirmed by the treasury department. Mr. Sears now states that the time has come to insist upon the same interpretation being placed upon newly mined gold that has been processed in the course of its recovery. "This is not scrap metal."

To reinforce this contention, he pointed out that the gold miner has a contractual relationship with the government, through patented ground or claim location. This contract grants him full title to the gold in or out of the ground, and it should not be taken from him except by due process of law which process is questioned by Mr. Sears.

Reaction of the audience was immediate and favorable. Senator McCarran seized upon the idea as additional ammunition for his fight in Congress.

O. H. Griggs and J. C. Kampvanee of California, Jack Pierce of New Mexico, Merrill E. Shoup, LeRoy Giles and J. T. Stoehlke, all of Colorado, took part in the discussion.

The golden touch was added by Joseph Stagg Lawrence, Vice President, Empire Trust Company, New York, when he waved the banner of a free gold market at the annual Gold and Silver banquet of the convention.

What Price Uranium?

No governmental agency has ever been more smoothly or more thoroughly castigated by the plain spoken group which gathers annually in Denver than was the Atomic Energy Commission at this meeting. Also, there has seldom been an agency which so poorly defended its position and whose defense received such unsympathetic reception as did the AEC.

The opening gun was fired when Blair Burwell, President of Minerals Engineering Company, Grand Junction, Colorado, and chairman of the Uranium section, read a paper entitled "The Economic Story of the Carnotite Region." His report, which revealed hitherto undisclosed facts about uranium production for the war-time Manhattan project, outlined the development of the carnotite fields of Western Colorado and Eastern Utah. He told how radium at $120,000 per gram had originally sparked the production while most of the vanadium values went onto the dump because the American interests controlling the radium fields were the same as those which controlled the foreign output of vanadium, and an agreement existed which limited vanadium production in Colorado to by-product output only.

He told how radium was discovered in the Belgian Congo and secretly developed in that country until in 1923 the Belgians announced the availability of large quantities of finished radium. The Colorado radium industry was killed almost overnight with a loss of many millions of dollars. This led to the formation of a European cartel, dominated by the Belgians.

He traced the development and production of the Great Bear Lake and Eldorado operations of Canada between 1930 and 1937 and their being stifled by reduced radium price and their eventual control by the cartel.

Assure Adequate Uranium

After discussing how the Colorado industry was rehabilitated and how it contributed so materially to both the war demand for vanadium and the atom bomb's demand for uranium, Mr. Burwell asked the question that all uranium miners want answered, and as a national policy should be answered, "Is not the government warranted in paying a substantial subsidy—almost any subsidy—to assure an adequate domestic source of uranium?"

While no direct statement was made, his remarks made the inference clear that on many and successive occasions, our government has lost its shirt in its dealings with foreign countries; and he concluded with the statement, "We cannot afford to make the mistake again of subordinating American uranium resource developments to foreign interference, prices or control."

In Simple Terms

Why production from the carnotite fields is doomed was reduced to its simplest terms, almost to basic English, by Howard Balsley, small pro-

Top: Happy in spite of conditions are small miners W. R. New, secretary, Central Idaho Mining & Industrial Association; Jack Walsh, Wilfley Leasing Company, Colorado; T. C. Moran, Summit County, Colorado; and Norman Ballantine, Country Boy Mine, Breckinridge, Colorado. Bottom: More gold conversation between Harry Spears, president, Calavares Central Gold Mining Company, and Leo Hennebach, superintendent, AS&R Arkansas Valley Smelter at Leadville.

ducer and former vanadium ore buyer from Moab, Utah.

After pointing out that carnotite is mined from exceedingly small deposits, with a minimum of mechanization and at relatively high prices because of the nature of its occurrence, Mr. Balsley produced the following data on prices and costs, all of which were accepted as probably average for the field.

"During the early war years, the actual cost of mining average grade ores was approximately 21c per lb. of V_2O_5 content and that was the price paid to the independent miner. The Metals Reserve purchasing program increased the output of the region by more than 39 percent by increasing the price to approximately 40c and making a haulage allowance which was more nearly in line with actual costs than those paid by the Atomic Energy Commission today.

"I have authentic figures showing that the cost of mining in small mines in 1944 (based upon the average cost of producing 130,000 tons of ore) was approximately $13.60 per ton. Since then, the outlay for labor and expenses has at least doubled, making today's costs $27.20 per ton, this without any allowance for profit, and based upon a grade of ore running 0.25 percent uranium oxide and 1.8 percent vanadium pentoxide. The minimum profit to which the producer should be entitled is not less than 50c per lb. for the U_3O_8 content of his ore and 15c per lb for the V_2O_5 content, or a total profit of $7.90 per ton for this grade of ore, making a total of $35.10 as the base minimum price which should rightfully be paid to the producer. The price being paid today for the same grade of ore is $23.91 which clearly does not cover his present-day actual cost.

"The price of vanadium of 31c per lb. contained now being paid by the AEC is approximately 10c per lb. lower than the price paid for it five years ago."

He further strengthened the mine operators' position with comparative figures as follows:

"The miner and shipper of lead ore to the smelter enjoys a return of approximately 70 percent of the gross market value of the lead contained in his ore. The vanadium (and uranium) miner receives only approximately 30 percent of the gross value of the vanadium contained in his ore."

Mr. Balsley also discussed the curtailment of production from many properties because the AEC will no longer buy ores having a lime content greater than 6 percent, and the fact that the 6c per ton mile haulage allowance is too low to cover minimum haulage costs.

Sumner T. Pike, member, Atomic Energy Commission, appeared in rebuttal at the Gold and Silver banquet after telling reporters at a press conference about some important peacetime developments of the work and promised that he would announce some important changes in the ore buying program at the dinner.

Watered Down Points

The crowd, hopeful that a real program of higher prices and increased production might be in the offing was disappointed with the watered down announcement that: 1. Periods of guaranteed minimum prices for low grade ores would be extended to five years. 2. The development allowance of 50c per lb. of uranium oxide will apply to all acceptable ores. (There is at present 0.15 percent minimum to receive such payment.) 3. Certain adjustments will be made in the price increment for ores within the range of 0.1 and 0.2 percent uranium oxide. He also said that by some time in the late summer a method should have been worked out which will permit the treatment and acceptance of high lime ores without penalty, but that this is not going to be rushed.

He defended the AEC position against paying higher prices with the statement, "Today we are getting what (uranium) we need to meet all of our requirements but most of it comes from foreign sources." And he attempt to make clear that it wouldn't be economic for the government to pay very much more for domestic production than it paid for foreign material—considering his audience, it was an impossible task.

R. D. Fischer and N. E. Ebbley, both of the U. S. Geological Survey, told about geological mapping and a diamond drilling program being conducted to locate additional reserves of carnotite; and Ray Sullivan of Minerals Engineering Company, discussed some of the mechanical innovations connected with this drilling program and some experimental mechanized mining operations in the field.

Fred R. Gruner and F. C. Bond of the Allis-Charlmers Manufacturing Company, showed pictures and discussed the future use of atomic energy.

Lead and Zinc

The base metal sections of the convention presented a relative sea of calm in contrast to gold and uranium or in contrast to these sessions at previous meetings when premium prices and tariffs were live topics. Contentment with conditions, except in the cases of small marginal operations, was in evidence.

"The Lead Market Situation" was discussed by Robert L. Ziegfeld, Secretary, Lead Industries Association. He reviewed lead output and demand for the past year as well as price trends over that period. The supply and demand status in the several large lead consuming fields was summarized as follows: Batteries, in fair balance; lead covered cable, still behind but catching up slowly; construction (industrial), prices are leading to substitutions; anti-knock gasoline, further increase in demand expected; paint, not to bright because high lead price is cutting content. In smaller uses: Insecticides, down; atom shields and television tubes, up.

While stockpile needs beyond June have not been indicated, Mr. Ziegfeld predicted that the demand will be as great or greater than at present. ECA countries have also been making a heavy demand for lead.

As to output for the year, he believes that mine production will be up, barring long strikes, recovery from scrap will be about the same as in 1948, imports will be heavy. He expects the expiring lead tariff to be extended.

Ernest V. Gent of the American Zinc Institute summarized conditions in the zinc industry. Briefly, the situation is good—almost, though not quite, as good as lead.

In discussing the industry in the Tri-State area, W. O. Bilharz, President, Tri-State Zinc & Lead Ore Producers Association, urged that some kind of parity program be developed to provide a sound price basis upon which lower grade mining operations could be developed and capital invested in longe range programs.

In forecasting the "Long and Short Term Demand for Metals," Dr. R. M. Weidenhammer, U. S. Department of Commerce, delivered one of the neatest well-yes-and-again-no addresses ever presented to a Denver mining convention. With many reservations, he seemed to feel that conditions for producers of copper, lead and zinc should appear more favorable

Top: Atom producers Blair Burwell, president, and J. E. Weston, director, Mineral Engineering Company, third largest producers of uranium in the country. Bottom: Bonanza Mines Trust Company was represented by A. O. Paulson, secretary-treasurer, and D. W. Schmitt, executive trustee.

throughout 1949. Principal merit in his paper lay in its brevity.

Selling Your Metals

A most interesting discussion of the relation between the ore buyer and producer was delivered by Blaine Watts, U. S. Smelting, Refining & Mining Company. He explained why buying schedules are established as they are and gave the miner some ideas on how to determine his best outlet for metal and how to approach the negotiations so as to obtain the most favorable conditions.

Mr. Watts was followed to the platform by W. H. H. Cranmer, President, New Park Mining Company of Utah, who concurred in the ore buyer's statements by describing how his company had driven a better bargain with the smelter. Mr. Cranmer advised the operator to be armed with the facts and you will get consideration.

He also sounded a conservative note of warning against large stockpiles and their possible effect on metal markets and the danger of reducing tariffs in times of short supply because they are difficult to replace when the situation is reversed.

Otto Herres, Vice President, Combined Metals Reduction Company, scheduled to address a luncheon meeting on "Tariffs, European Recovery Program and Spending American Taxpayers' Money to Produce Minerals Abroad," ably ran the full scope of his subject to present the "America First" position on each point. He told his audience what it wanted to hear when he plumped for higher tariff, premium payments for marginal producers and opposed development of foreign mines with federal money, either ECA or other funds.

W. O. BILHARZ, president, Tri-State Zinc & Lead Ore Producers Association, reviews the status of the industry in his section of the country.

Small Miners Speak

The small mine operators stated their position in a very short session —given the proper incentive, they can do the job. T. C. Moran, Colorado; W. R. New, Secretary, Central Idaho Mining & Industrial Association; Jack Walsh, Wilfley Leasing Company; and Norman Ballantine, Country Boy Mine, took part in the discussion.

Incentive payments, a national program for exploration and development and road building aid were the principal needs cited by the group.

The balance of the program, a well planned and well executed one, was largely of a semi-technical and regional nature. Papers covering the full range of Colorado's mineral interests were presented. Coal, oil, non-metallics, milling, recent developments and an especially fine discussion of oil shale, its importance, mining and refining, held the attention of the gathering.

Shown with Chaffee County's elaborate mineral display are: Harry Williamson and Lewis W. Perry. Both are interested in fluorspar.

Government department representatives outlined plans and programs of the government in the industry. These talks were highlighted by Dr. James Boyd, Director, U. S. Bureau of Mines, who spoke on the place of the Bureau in Mining.

Replate the Dome

The World Famous Sowbelly Dinner climaxed the meeting. The usual "basic humor" of the event was broken by the presentation to Governor Lee Knous, of Colorado, by the Colorado Association, enough newly mined gold, in various forms, to recover the dome of the capitol building with gold leaf. An estimated 46 ounces are required for the job, and it is expected that the Colorado State Legislature will appropriate the necessary funds for refining the metal and applying it to the building.

Construction Proceeds at Quebec Titanium Deposits

With more than 12,000 tons of equipment moved to Havre St. Pierre on the north shore of the St. Lawrence River, Quebec Iron and Titanium Corporation, subsidiary of Kennecott Copper and New Jersey Zinc, has a construction program well under way at its Allard Lake ilmenite deposits.

The present construction program is under the direction of A. H. Robertson and Fraser, Brace & Company, contractors. One of their first jobs will be the construction of 27 miles of railroad from the fishing village of Havre St. Pierre to Allard Lake.

A separate company will be incorporated to operate the railway and transportation phases of the enterprise, which will include barging the ore from Havre St. Pierre to the smelter soon to be under construction at Sorel for the production of iron and titanium slag. The initial unit will have a capacity of 1,500 tons, and provision is being made for four such units.

Present plans call for a production of 1,500 tons of ore daily, estimated output from the annual treatment of 550,000 tons being about 175,000 tons of high-grade iron and 250,000 tons of titanium oxide slag.

Two main orebodies have been indicated: The Cliff, with an estimated 12,000,000 tons, and the Tio, largest of its type in the world, with an estimated 120,000,000 tons. At the latter, drill holes 400' deep are still in ore.

Grand Deposit's Nevada Operations Stepped Up

Lessee operations are resulting in accelerated mineral production at the properties of Grand Deposit Mining Company in Spring Valley, White Pine County, Nevada, according to a recent announcement by company officials.

Three sets of lessees are active in various sections of the mine at the present time. In one section, known as the 600 level north drift, west of the main shaft, a new lead orebody has been encountered. According to Paul Lyons, Jr., mine superintendent, recent shipments have shown good values in lead and silver.

Other active lessees on the property include a group on the 500 level where development work is currently being conducted, and on the 300 level where exploration is under way. A shipment of zinc ore was recently made from the latter project.

Newly granted is a lease on a portion of the company's holdings known as the Kansas group which shipped considerable copper ore during the war. The lessees will operate through the lower tunnel to develop extensions of orebodies formerly productive in upper levels.

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AN OMINOUS OMISSION

The mining industry supplies more than 50 percent of the pay freight on all the railroads of the country, and trucks also handle enormous additional quantities of mine products. Every industry in some way depends on mine products as a basis for its operation. In fact, if all the mines in the country were closed for thirty days, every industrial operation in the United States would either be stalled or stopped. The President has delivered his State of the Nation address. In that long document there is not a single word about mining—the real basic industry. To the Eastern mind the mining industry simply does not exist.

There was a slight reference to the development of the mineral resources. This gives slight comfort to miners for we know the present departmental plans, which are an entering wedge looking to the socialization or nationalization of the whole mining industry. In the President's talk every phase of this subject is dismissed with less than ten words.

This is a sad commentary on the public relations of the mining industry. *What are* YOU *going to do about it?*

Premium Payments—A Misnomer

The new session of Congress has begun and some of the staunch friends of mining—of whom we have a few—will be introducing in Congress bills calling for the making of incentive payments in order to promote prospecting, to encourage the development of prospects, and to recover marginal ores that otherwise would not be mined. It is unfortunate that the term "premium" was ever used in this connection for it does not represent the actual condition, nor the purpose of the payments. This is shown by the original statements of the Government. They might more properly be called "compensation payments" or "excess cost refunds."

It did, however, encourage money-hungry tax collectors to try to force the collection of sales taxes on the refunds due on these government-contracted ores.

Everyone knows that the cost of mining in the above three types of activity is greater than in regular routine operation in a developed mine. The sole purpose of these refund payments was to repay to the operator the money already spent in recovering this added tonnage of ore. This is specifically stated by the Government in the form PM 2458: "*The only purpose of the premium plan is to compensate the operator for the extra costs involved in bringing out additional metal output.*" It is thus apparent that this was a debt of the Government due the operator when the ore was above ground, and had no relation whatever to the time or price of sale of the ore.

We quote now from WPB 2-3892: "Metals Reserve has stated that it will cause the premium payments on *production* in excess of quotas to be made *by paying a sum equal to the difference between the market price of the materials involved* and the equivalent of 17 cts. per pound." Numberless court decisions have determined how and where the standard varying sales price of metals and ores are fixed. *From all the above it is apparent that all ores of copper, lead and zinc were sold at the regular market price.* The "compensation payment" or "excess cost refund" was an entity by itself and not a part of the sales price. It was a repayment to the operator of money that he had already spent, and was determined by an arbitrary, fixed (but imaginary) standard valuation for all operations instead of the endless detail of fixing an amount for each property. Because all these properties were operating under strict federal regulations the Government thus became, to the extent of the "excess cost refund," a joint-operator with the miner.

Space will not permit us to complete the argument, but from the above and much more that could be added along the same line, it is apparent that suits to recover these taxes so unjustly levied might be in order.

The Wanderer

Betty Thompson's Centennial Narratives of Old California

NEVADA CITY: WHERE HYDRAULICKING BEGAN

Like Rome, Nevada City is built upon seven hills—but there the resemblance ends. Deer Creek is no River Tiber, and the burrows of coyote diggings are a far cry from the labyrinthine tunnels of the Catacombs. Yet Nevada City has its own place in history—the history of mining. So many of the early mining improvements were developed here that it may well be considered the camp at which an infant industry began to grow up.

The first man to prospect the region was none other than James Marshall, discoverer of gold at Coloma. By the summer of 1848, the American River had been taken over by frenzied miners, and Marshall, ever restless and dissatisfied, now started searching for new and bigger placers. He did a little panning along Deer Creek, found color, but soon abandoned the district as not offering sufficient rewards.

Over a year passed. Gold was found as far south as Sonora, as far north as Shasta. Then, in September, 1849, members of an emigrant party just down from Truckee Pass paused to try their luck at Deer Creek, and made a strike. Immediately a new rush was on. By March of 1850 the camp of Deer Creek Dry Diggings had reached such a size it was decided to incorporate under the more dignified name of Nevada. The suffix "city" was adopted later, after the neighboring state appropriated the name for its own.

The gold seekers mined the streams, the ditches and dry gulches. Then, up Old Coyote Ravine, north of town, it was discovered that the leads, instead of disappearing, increased in value as they worked into the bank. Frantically the miners dug into the sides of the hill, until it was dotted with holes, each having beside it a small mound of dirt. This was the start of "coyoteing." Miners, powdered with the white dust characteristic of Nevada City, were a familiar sight. A camp grew up, known as Coyoteville, and the burrows deepened and became more dangerous, since the miners knew nothing of timbering and improvised as they went along. Before it was finally worked out, an area a mile long and never more than 100 feet wide produced over $8,000,000.

When mining started at Nevada, prospectors were still using the familiar old pan, pick and cradle. Then someone invented the Long Tom, and the new innovation was so spectacularly successful that the cradle was almost completely outmoded.

Ground sluicing was common when water was available, but during the dry summer of '51, the miners were forced to carry their pay dirt down to Deer Creek for washing. A little of this back-breaking work was enough to point up the advantages of cutting ditches to bring water to the claims. Two of these were incorporated into the Coyote and Deer Creek Water Company. Water was sold by the "Tom," an amount sufficient to operate a Long Tom for one day. Rates were $4 a day for clear "first" water, and dropped to $1 for water used several times previously. This was probably the first recorded sale of water for such a purpose. By 1867 the Nevada City region had 850 miles of ditches, built at a total cost of $4,420,000.

In 1852, an ex-sailmaker by the name of Chabot cast a thoughtful eye at all the ground sluicing going on, and then proceeded to make himself a canvas hose, 35 feet long, with which he washed his dirt. A year later he helped two friends to construct a longer hose, complete with nozzle and a box for building up a small amount of pressure. This was the start of hydraulic mining—another "first" for Nevada city.

Back in June, 1850, a few days after McKnight discovered gold in quartz at Grass Valley, four young New Englanders made the same find in Nevada, at the Gold Tunnel Mine. There was a burst of excitement, followed by the realization that no one knew how to go about getting the gold out of the rock.

Then a Dr. Rogers came forth with a brilliant theory and a scheme to back it up. He maintained that quartz was porous and the only thing necessary was to expand the space between the structures with heat so the imprisoned gold could drop out. His explanation was so convincing that

The Coyote & Deer Creek Water Company's office in the Sugar Loaf Hill district near Nevada City, California, from an old Daguerreotype taken about 1852. This company supplied many of the hydraulic mines with their water. Capital outlays for the construction of ditches amounted to over $4,000,000 by 1853.

Photo courtesy of Wells Fargo Bank

the Bunker Hill Mining Company was immediately formed, and the lucky shareholders put up $85,000 for a plant.

A furnace was constructed and an iron reservoir was laid at the bottom of a chimney to receive the gold as it fell from the rock. The chimney was packed with alternate layers of wood and quartz, large reserves of both were made ready, and then the great operation commenced.

There was no eight-hour day at Bunker Hill. The furnace worked round the clock, the shareholders stood around estimating their profits, and from time to time Dr. Rogers rode up on a horse to give a few orders. Finally, after huge quantities of rock had been processed, the day dawned for the clean-up. Envious bystanders watched while the bottom of the chimney was scraped. The stockholders held their breaths in anticipatory delight as the residue was brought to light. The result? An unimpressive mass of cinders.

The Bunker Hill Company folded forthwith and the eminent doctor left town still defending his theory. And perhaps it didn't have a fair test at that, for some time later one curious gentleman ran some tests on the rock. It was quartz all right, pure quartz with not a trace of gold in it.

While experiments in quartz milling continued, the sluices were operating in every direction. Houses were undermined, bridges washed out, and the roads were blocked with deep chasms. No one's property was safe. One day a merchant walked out of his front door to find two men digging up the street at his entrance. He protested. They shrugged. "There's no law against it." He dived into his shop, reappeared with a gun, and announced ominously, "All right, then, I'll make one," which ended that particular project.

Riffled sluice boxes were now superseding the Long Toms, and, as quartz veins were worked, it became evident that new mining laws were needed. In 1852 the Quartz Regulations of Nevada County were adopted, under which the size of claims, previously limited to 39 feet, now was increased to 100 feet, with an extra hundred for the original prospector. Also, it was ruled that each claim should include all dips, angles and variations in the vein—a provision so important that it was made part of the United States Mining Code.

One of Nevada's "firsts" cost it dear in the matter of population. In June, 1859, two men brought back from the Washoe Indian Territory samples of gold in strange bluish rock. At Ott's Assay Office these ran an incredible $4,791 a ton—$1,595 in gold; $3,196 in silver. This was the first assay of Comstock ore, and started the rush to the Big Bonanza, which was spearheaded by a large part of Nevada City. Among those who did all right for themselves on the Comstock were George Hearst, John Mackay, and James Fair.

Nevada City was unusually well behaved as mining camps go, with a minimum of murders, lynchings and other acts of violence. Even its most colorful character, Madame Moustache, made her last lurid gesture elsewhere.

In Nevada City's heyday, an attractive young Frenchwoman named Eleanor Dumont opened a gambling house at which she dealt monte. At first she was amazingly successful. Then the free-spending miners began to drift away, and her charms became less beguiling as the down on her upper lip increased until she acquired her blunt nickname. Finally, she also left Nevada to try her luck at other camps. Nothing more was heard of her until, years later, the *Nevada City Journal* reported that a former resident, Eleanor Dumont—otherwise known as Madame Moustache—had committed suicide at Bodie.

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Screw on your bits or forge 'em on, Bethlehem Hollow Drill Steel is dependable either way. And whether you are drilling hard granite or soft shale Bethlehem Hollow bites its way through at a steady clip. Its mechanical properties are carefully controlled so that you can count on uniformity from bar to bar. Its wide quenching range makes it easy to heat-treat for the ideal balance of hardness for wear-resistance.

Bethlehem Hollow is tough, fatigue-resisting, and it forges readily to close dimensions. It makes tough shanks, hard bits, and long-wearing threads. The center hole is smooth and true.

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THE PIKEVILLE Coal Company of Pikeville, Tenn., has standardized on International Power. An International UD-9 Diesel Power Unit provides power to "pull" the coal out of the mine. Driving a double drum winch, the UD-9 takes out 12 loaded cars every half-hour on a 1300-foot haul. Empties are returned by the same unit. Twenty-four tons an hour are hauled out by this 53-horsepower International Diesel.

In three mines, the Pikeville Coal Company uses 15 International Power Units to drive pumps, fans, generators and car hoists. One of these, an International U-4 Carbureted Power Unit, drives a 30-inch suction fan drawing 5,000 cubic feet of air per minute from a heading of 3500 feet.

LEE MARSH, superintendent, says: "We use nothing but International Power Units. The fifteen Internationals we are using will stand more hard work than any engine built. Service from International Dealers is good and parts are easy to obtain."

VISIT your International Industrial Power Distributor or Dealer and see how International Power will pay off in your mine. Jot down a "Memo" to see him soon.

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INDUSTRIAL POWER

CRAWLER TRACTORS
WHEEL TRACTORS
DIESEL ENGINES
POWER UNITS

MINING MEN AND THEIR ACTIVITIES

About men who are well known and prominent in American metal mining circles

C. H. Benedict, chief metallurgist for the Calumet & Hecla Consolidated Copper Company, has retired after 50 years with the company. He was first employed by C&H in 1898 at the Lake Linden, Michigan, stamp mills.

J. P. Hall was recently re-elected president of the Western Mining Council. Other officials named were: *Chas. G. Johnson* of Sacramento, first vice-president; *J. C. Kempvanee*, second vice-president; *L. W. Loomis* of Placerville, California, third vice-president; *John D. Hubbard*, secretary; *Paul Claiborne*, treasurer; and *Rosco Wright* of Goldfield, Nevada, a director at large.

Louis Buchman, general manager of the Utah Copper Division, Kennecott Copper Corporation, has announced the promotions of *Roy Hatch*, *L. F. Pett* and *J. C. Landenberger, Jr.* Hatch was advanced from labor relations director to assistant to the general manager with jurisdiction over all employee and public relations; Pett, assistant mine superintendent, was advanced to mine superintendent, and Landenberger, formerly general mill foreman, replaced Hatch as director of labor relations.

Elmer F. Blu, general solicitor for the Oliver Iron Mining Company and other U. S. Steel subsidiaries, retired recently after 38 years of service with the organization. He has been succeeded by *Donald D. Harries* who had been assistant general solicitor.

O. O. Ormond, superintendent of the Wabigon iron mine, Buhl, Minnesota, has retired, according to an announcement by the M. A. Hanna Company. The firm also announced the retirements of *S. A. Mahon*, Keewatin, beneficiation engineer, and *I. P. Ring*, Hibbing, chief clerk. All three men had better than 35 years of service with the company.

John D. Sullivan, assistant director of the Battelle Institute at Columbus, Ohio, is chairman of a newly created division of A. I. M. E. to be known as the Extractive Metallurgical Division. Its function will be to correlate metallurgical information on the production and refining of nonferrous metals.

B. E. Grant of Bingham, Utah, general superintendent since 1944 of the U. S. and Lark mine of the United States Smelting Refining and Mining Company, has been promoted to assistant to the manager of Western mines, succeeding *A. G. Kirkland*, who moved up to assistant manager of Western mines on January 1. Other company appointments included: *Max M. Dubois*, who has been named general superintendent of the U. S. and Lark mine; *Bennett Boyd*, who succeeds Dubois as superintendent of the Lark section, and *Harold H. Wells*, formerly assistant general mine foreman of the U. S. section, who replaces Boyd as assistant superintendent of the Lark section.

Charles H. Foreman, chief engineer of the Hecla Mining Company, Wallace, Idaho, for the past 40 years, retired recently.

E. D. Wingfield, general manager of the Freeport Sulphur Company, has been elected a vice-president of the company. In his new capacity, Wingfield is in charge of the company's Southern operations, with headquarters at New Orleans.

H. D. Stark, assistant to the vice-president in charge of operations for Jones & Laughlin Steel Corporation, has retired after 49 years of service with the corporation.

C. T. Harvey, formerly with the Natomas Company at its Greenan Placers operation, Battle Mountain, Nevada, may now be addressed at Box 53, Minden.

James E. Bandy, who was superintendent at the Elko, Nevada, operation of the St. Elmo Mining Company, is now residing in Gorman, California.

George B. McMeans has replaced *C. H. Lenhart*, resigned, as general superintendent of the steel plant of Kaiser Company, Inc., Iron and Steel Division, Fontana, California.

John Russell, formerly with Combined Metals Reduction Company, Pioche, Nevada, is now on the engineering staff of Consolidated Coppermines Corporation at Kimberly.

Charles H. Foreman, chief engineer for the Hecla Mining Company in Idaho, retired recently after 40 years of service with the firm. Succeeding Foreman is *R. E. Sorenson*, formerly chief geologist. He will be assisted by *Phil Lindstrom*.

Charles L. Hazen, formerly mill superintendent for the Standard Cyaniding Company at Rye Patch, Nevada, has accepted the position of mill superintendent for the Central Comstock Mining Company, Virginia City, Nevada.

C. H. Carmichael, former superintendent of the Tamarack & Custer Consolidated Mining Company at Wallace, Idaho, is now residing in Hailey, Idaho.

Athelstan F. Spilhaus has been named dean of the Institute of Technology at the University of Minnesota.

Gus F. Anderson, formerly superintendent of Butler Brothers' Louise and Merrit iron mines on the Cuyuna Range of Minnesota, is now residing at Coos Bay, Oregon.

William H. Chapman has been appointed a mine inspector for the Colorado State Bureau of mines, replacing the late *George Becker*. Filling another mine inspector vacancy in the Bureau is *John W. Doyle*, who succeeds *Richard Murray*, resigned.

Thorsten W. Holmes of Caspian, Michigan, has been appointed district safety supervisor for Pickands Mather & Company's Menominee Range mines. He succeeds the late *A. H. Trestrail*.

John Matson, president and general manager of the Leonora Mining & Milling Company and the Little May Mining Company, has new headquarters at 319 Atlas Building, Salt Lake City 1, Utah.

John L. Kellogg, formerly associated with the United States Smelting Refining and Mining Company, is now assistant superintendent of mines at the Jefferson County properties of the American Zinc Company of Tennessee, Mascot, Tennessee.

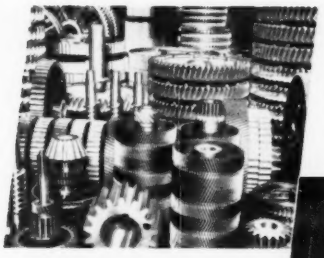
Charles A. Tout, formerly with the Hamilton-Victor Mining and Milling Company, now has his consultant mining engineer's office in Victor, Montana.

R. K. Matheson is general superintendent of the Coronado Copper and Zinc Company which has placed a new selective flotation plant in operation at Ingot, California. In charge of the new plant will be *H. R. Herner*, mill superintendent. Other supervisory personnel include: *Jack Widauf*, mine superintendent, and *Bruce Stoddard*, mining engineer.

Allen Goodrich of Iron Mountain, Michigan, has accepted a position in the engineering department of the Cleveland Cliffs Iron Company at Taconite, Minnesota.

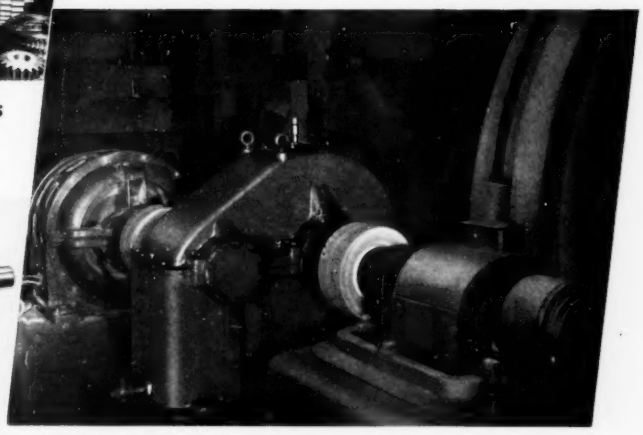
Ora H. Rostad, formerly with the Jardine Mining Company at Jardine, Montana, is now employed by the Metaline Mining Company at Metaline, Washington.

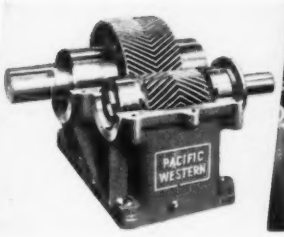
LOUIS C. BALL has been appointed geologist of the Standard Gypsum Company, Oakland, California. Ball was formerly with The Permanente Metals Corporation, engaged in the exploration of bauxite deposits under option in Surinam, Dutch Guiana.



Gears of all types and sizes

A typical mining industry application of Pacific-Western speed reducers is shown in the photograph below of a ball-mill drive.





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Fast delivery is now available on many popular sizes of PACIFIC-WESTERN standard reducers from stock.

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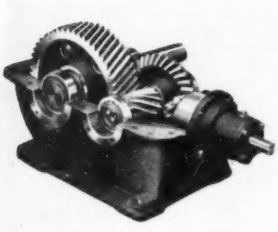
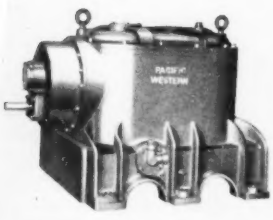


Right-angle speed reducer



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Sinking Program Rushed At Senator Stewart Mine

Work is being pushed by Silver Bowl, Inc., to cut a shaft station and hoist room in preparation for sinking a vertical 2½ compartment shaft at the Senator Stewart mine in Deadwood Gulch, just west of Kellogg, Idaho. The station is being cut east of the main workings, about 2,000' from the adit.

Upon completion of this work, the shaft will be sunk to the 100' level, with a 40' sump, and a station cut. From there, a crosscut will be extended directly under the showing of a rich lead ore uncovered on the tunnel level.

Gene Iverson, engineer in charge of operations, estimates that 100' of crosscutting to the west will reach the vein. Drifts will then be started, both east and west, and a raise put up to connect with the upper level for ventilation and stoping room.

If commercial ore is developed on the 100' level, additional sinking will be undertaken from the net profits of the operations. The production goal has been set for 100 tons daily from shaft development and previously opened ore on the tunnel level. For the time being, the ore will be treated at the Nancy Lee mill on Pine Creek.

Livingston Erecting 100-Ton Mill Near Mackay

With the arrival of necessary mill equipment, Livingston Mines, Inc., is starting construction of a 100-ton mill at its mine site, 68 miles from Mackay in Custer County, Idaho. Equipment for the new mill was purchased from the Emery mine at Deer Lodge, Montana, and arrived at the property only recently.

The plant will treat high-grade dumps and mine run lead-zinc-silver ore which formerly was shipped direct to the smelter at Midvale, Utah.

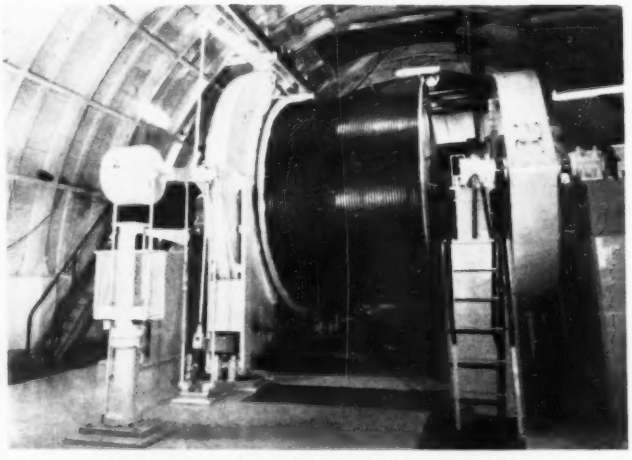
Stoping operations are being stepped up on a three-shift basis by the *Silver Summit Mining Company*, Wallace, Idaho, in order to boost production on the 3,000' level. Meanwhile, preparations have been completed for sinking an offset shaft, starting from the 3,000' level in the Polaris-Silver Summit shaft. Silver ore being taken out in current development work is now being handled at the Polaris mill. Previous ore treated at the Hecla plant in Gem is reported to have averaged 30 to 40 oz. silver per ton.

The *Sierra Silver - Lead Mining Company*, organized last year with the acquisition of mining properties in the Pine Creek, Osburn and Nine Mile districts, has now acquired the old *Sister* group of claims on Canyon Creek, about a mile and a half from Wallace, Idaho. According to Company President Benjamin H. Miles, the company will reopen the old workings which date back to 1899. The property has been idle since 1929, but it is reported to have a good production record of high-grade silver-lead ore. The company also intends to do some development work in its neighboring *Shoshone* mine.

A new Idaho firm, *Gold Back Consolidated Mines, Inc.*, has been organized for the purpose of developing the *Gold Back* mine near the *Daddy* and *Mother Lode* gold mines in Murray, Idaho, and the old *Monarch* mine, six miles southeast of Murray. At the Gold Back, the company proposes to develop a large iron vein, carrying sufficient lead, zinc and silver values to constitute mill grade ore. At the Monarch, a large tonnage of low-grade lead-zinc ore is said to be available in the upper level for immediate processing. Meanwhile, the company is making preparations for the erection of necessary mine buildings. A. T. Slawson of Murray is president of the new firm.

High grade streaks of silver-copper ore have been encountered by the *Coeur d'Alene Mines Corporation*, Kellogg, Idaho, in its west drift on the 2,800' level. A picked sample is reported to have assayed high in silver and 7 percent copper per ton. At present, only small stringers have been found, but the vein structure is reported to be extremely favorable.

Keith Whiting, chief geologist of the Northwestern Division, *American Smelting and Refining Company*, announced recently that the shaft at the *Vulcan Silver Lead* property near Wallace, Idaho, had reached a depth of 1,671'. This deep development program is being carried out by AS&R and *Day Mines, Inc.*, for the purpose of exploring their respective holdings



BUNKER HILL WILL HAVE DEEPEST MINE IN COEUR D'ALENE

The Bunker Hill & Sullivan Mining Company is now carrying out a shaft development program at Kellogg, Idaho, which will give its mine the greatest depth in the Coeur d'Alene district. At the present time, Sunshine is the deepest mine, with a 1,000' below sea level depth. Extension of the Bunker Hill shaft from the 2,800 to 4,000 level will bring its depth to 1,200' below sea level, opening an additional 1,200' of virgin ground for development. The shaft is of the incline type and is powered by the world's largest underground hoist, shown above.

These caps promote safety in Electrical Firing

Designed to meet any underground condition, these dependable Du Pont Electric Blasting Caps are raising blasting efficiency in all types of ore mining.

DU PONT INSTANTANEOUS ELECTRIC BLASTING CAPS offer three exclusive safety features:

1. **Nylon Insulated Wires**—Abrasion-resistant, non-cracking, brilliantly colored for quick identification.
2. **Rubber Plug Closure**—Double-crimped into shells, highly water-resistant.
3. **Aluminum Foil Shielded Shunt**—Bared ends short-circuited for entire length *and* shielded from accidental contact with electric currents.

DU PONT "SERIES B" DELAY ELECTRIC BLASTING CAPS, in addition to the above advantages, also

1. **Increase the safety** of rotational shooting by eliminating misfires due to arcing or "water hammer."
2. **Function perfectly** in all ten periods under the most adverse conditions—high voltages, parallel circuits and under water.

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1. **Better fragmentation**—allowing a saving in dynamite.
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5. **Easier Priming**—all nine periods have the same length shell.

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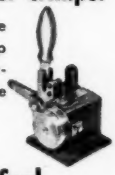

* * *

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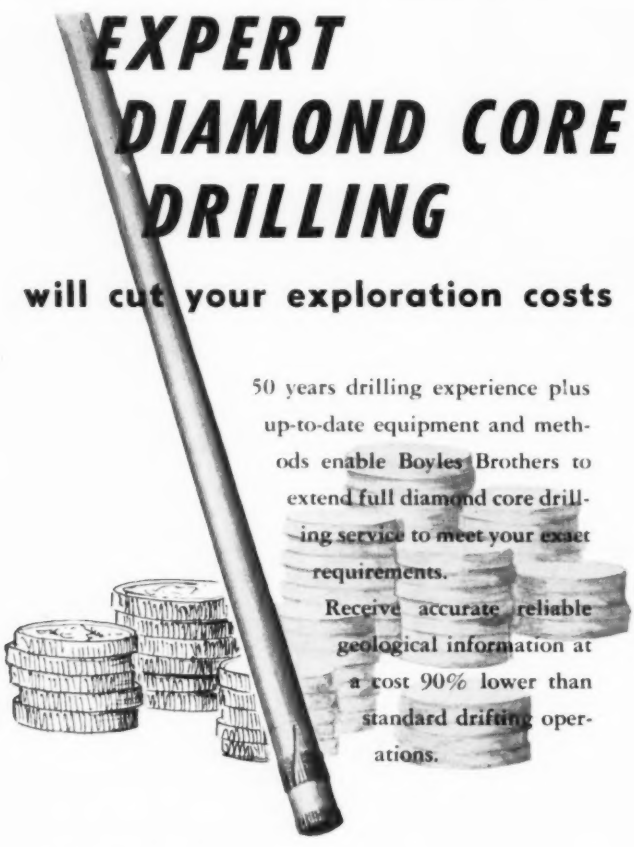
BLASTING SUPPLIES AND ACCESSORIES

in the eastern end of the Silver Belt in the Coeur d'Alenes. The shaft will be sunk to a depth of 3,000'.

Zanetti Brothers have purchased the remains of the 2,000-ton Hecla tailings plant at Osburn, Idaho, which was destroyed by fire last Christmas. The new owners, who are also the operators of the Galena mill on Lake Gulch, are converting the plant into a 500-ton capacity flotation unit, having salvaged some of the machinery. The Northwest's largest tailings operation, about 4,000,000 tons had been processed from accumulations on the Osburn flats.

The *Hypotheek Mining and Milling Company* is preparing to start mining operations, having unwatered the 700' level of its property on French Gulch, south of Kingston, Idaho. The west drift on the 700' level has a stope within 400' of the station, it is reported, from which initial production will be drawn. The company's main objective, however, will be to open the 700 level to the east of the Placer Creek fault, crosscutting southerly about 200' to intersect the faulted portion of the main Hypotheek vein.

The main prospect tunnel being driven by *Inspiration Lead Company, Inc.*, has now passed the 5,900' mark and is reported to be nearing its objective, the Black Cloud fault. For some distance, the face has been in a granite formation, anticipated from surface showings, but recently the mass has shown signs of alteration and is now becoming softer. In connection with this project, the mine's ventilation system has been enlarged and surface plant improvements made to reduce fire hazards. Inspiration adjoins the Silverore group and the Dayrock mine, northeast of Osburn, Idaho. Present work is being directed by engineers of the Silver Dollar Mining Company.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MONTANA

At the *Liberal King* mine in the Pine Creek district near Kellogg, Idaho, Sunset Minerals, Inc., is now driving a crosscut from the winze on the 1,200 level to a point directly beneath the main shaft. Upon completion of this work, a raise will be put up to the shaft on the 1,000 level, thus reducing the cost of ore produced on the 1,200 and preparing for further sinking of the shaft. Production from the Liberal King is averaging two cars lead concentrates and six cars zinc concentrates monthly. Reserves are estimated at 150,000 tons.

The *Saranac Mining Company*, operating the *Brooklyn* lead-zinc-silver mine near Maxville, Montana, is resuming production activities at its 200-ton capacity mill after a shutdown during the winter months. The lead-silver concentrate is shipped to the East Helena smelter and the zinc to Anaconda.

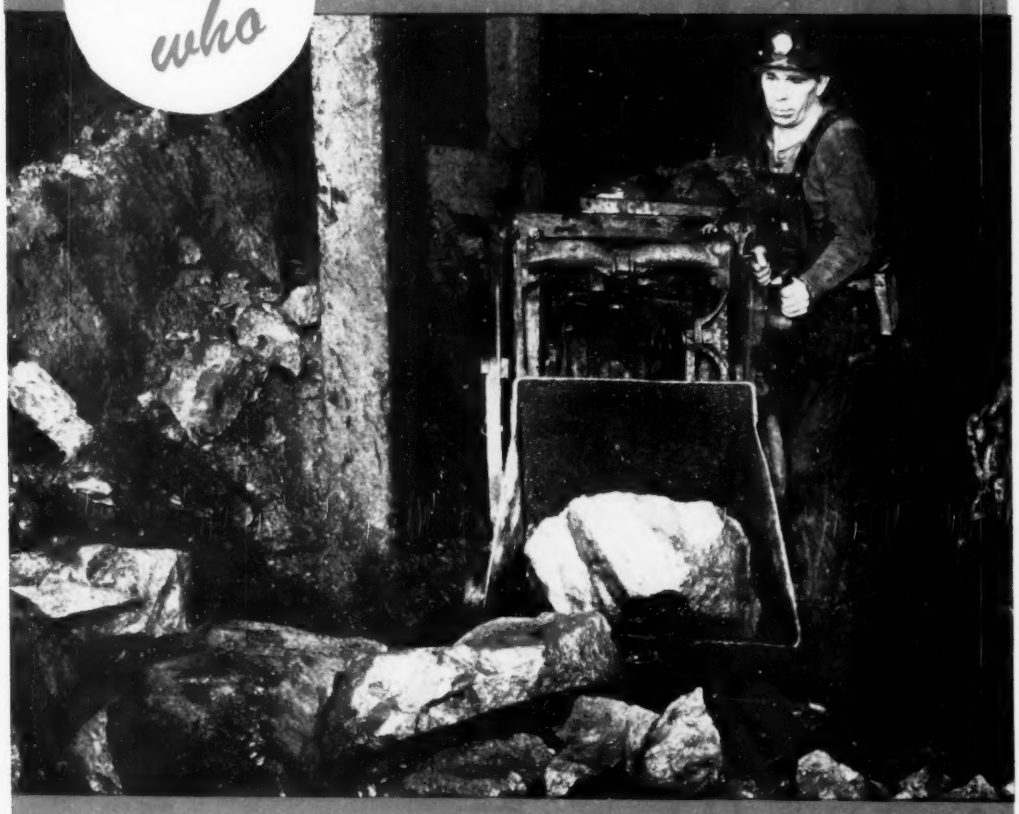
Mining and milling operations are expected to be resumed in March by the *Rainbow Mining Company* at its *Drumlummon* mine near Marysville, Montana. A crew has been at work since last August repairing the main shaft which was wrecked by a cave-in that resulted in the suspension of mining activities. For the first seven months of 1948, the mine produced 6,127.6 oz. gold and 35,040.52 oz. silver, valued at $250 thousand. The property is equipped with a 150-ton amalgamation-flotation plant.

It is reported that the *Nancy Lee Mining Company* is receiving $1,400 monthly from ore produced at its *King & Queen* mine near Superior, Montana. The property is under lease to E. G. Smith for a 10-year period.

The *Bridger Mining Company* has been incorporated in Montana with a capital of $150 thousand. Incorporators are: W. J. Cushing of Dillon; J. S. Webster and Orville Boehlke, both of Rexburg, Idaho.

(*Continued on Page* 57)

who's who IN THE MINING INDUSTRY



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Eimco's have been chosen repeatedly to replace other types of equipment because Eimco's load faster, better, easier and cheaper. Eimco RockerShovels are designed and built by mining men in a mining district.

RockerShovels, the original successful loading equipment, can lower your loading costs. If you do not have RockerShovels in your mine—write for information. You'll be amazed at the low cost of operating these machines, both in maintenance and air consumption.

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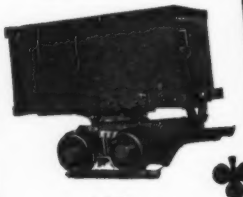

Ask for Catalog 40

A ♣

C.S. Card Iron Works Co.
Denver, Colorado

GRAB SAMPLES—From the Mail

Revolt in Malaya

Dear Sir:

Having just received your October 1948 number, I am astonished to read the comments expressed on page 49 regarding Malaya, which I presume came from your Singapore correspondent.

It was a gross exaggeration to say at any time during the present outbreak of Communist terrorism that "terrorists are in virtual control of the interior." Moreover, terrorist activities received an early check as a result of action taken by the Malayan Government under emergency powers and the present outlook does not warrant the comment that a sharp decline in output is feared.

It may be of interest to you to know that Singapore is not generally a good source of information regarding conditions in Malaya, as they are rarely in touch with actual conditions up-country.

Yours faithfully,
J. D. Mead,
c/o Messrs. Osborne & Chappel
Ipoh, Perak
Federated Malay States

Dear Sir:

I am instructed to inform you that my Council thoroughly endorses the opinion expressed in the letter of the 14th instant addressed to you by one of its members, Mr. J. D. Mead, regarding the reference in the WORLD MINING of October, 1948, to present conditions in Malaya. I am to request that you will give due publicity to Mr. Mead's letter.

Yours faithfully,
L. J. Peace,
Secretary
F. M. S. Chamber of Mines
P. O. Box 88
Ipoh, Perak
Federated Malay States

A Valuable Contribution

Dear Sir:

Thank you for the valuable contribution to the mineral sciences, namely, WORLD MINING, the International Supplement of MINING WORLD, which has been received by the Facultad de Ciencias Fisicas y Matematicas. It rates a high reader interest.

Olga Ugueto Leon,
Librarian,
School of Engineering,
Universidad Central de Venezuela
Caracas

Bingham Canyon, Alaska

Dear Sir:

Please allow me to congratulate you on your new publication. I am sure that it will prove of great interest and assistance to mining men the world over. If I may venture a little friendly criticism, the notes on mining activities in various countries display a number of minor inaccuracies which are bound to suggest to the reader who observes them that other items are equally incorrect. He who notes, for example, that you have a correspondent in Redruth (Cornwall) and yet that twice (Oct. 48, p. 49, and Nov. 48, p. 54) you discuss Cornish mining under the subheading "Wales," is not likely to be favourably impressed. You, Sir, would not be well impressed to read in an English journal news of "the Utah Copper Company's mines at Bingham Canyon, Alaska."

Please believe that my only object is to help you to gain the confidence of your readers. If I were not sure that you will welcome constructive criticism, I should not bother to write to you.

Yours faithfully,
K. C. G. Heath
61 Moorgate
London, E. C. 2

A Publication of Interest

Dear Sir:

I thank very much for your very kind mailing of the WORLD MINING issues; they are for me of the greatest interest and I hope that this publication will get soon the best success and extension.

With many thanks, I am

Yours faithfully,
R. Carbonnier,
Member AIME
Ingenieur Civil des Mines
Tananative, Madagascar
Africa

International Mining Activities

Dear Sir:

I have seen the December issue of the WORLD MINING in the Department sent to Osman Bey Moharram, the Egyptian Inspector of Mines; found it very interesting and a good reference of international mining activities.

I would be grateful if you can kindly send me this useful magazine.

Yours faithfully,
Mohamed Zaki Hathout,
Mining Engineer,
Department of Mines
Dawawin Post Office
Cairo, Egypt

A Good Reference

Dear Sir:

Thanks for a copy of the WORLD MINING which you were kind enough to send me. The contents are extremely interesting, for they are a good reference for me to know the recent progress of mining techniques in the world.

Again thanking you.

Yours truly,
Yaozo Fukihara,
Managing Director,
Mitsubishi Mining Company, Ltd.
706, 1-chome
Tokyo, Japan

Gentlemen:

Lately, I had the opportunity of reading for the first time your monthly WORLD MINING. I found it so interesting that I dare ask you to put my name on your regular mailing list as an engineer-geologist actually employed at the Molybdenite Corporation of Canada in the capacity of mine manager.

In addition to the above, I am also responsible for a weekly chronicle on mining subjects at Radio-Canada (short wave), so you can easily understand how helpful your world information would be to me.

I thank you for your kind attention and remain,

Yours very truly,
Benoit W. Marcotte,
Mine Manager,
Molybdenite Corporation of Canada
Abitibi, Quebec, Canada

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WORLD MINING

The International Department of MINING WORLD

SAN FRANCISCO, CALIFORNIA MARCH, 1949

INTERNATIONAL PANORAMA

JOHANNESBURG—The International Monetary Fund sanctions the sale of 100,000 oz. of South African gold at a price of $38.20 an ounce of 22 carat gold. (Pure gold is rated at 24 carat.) Finance Minister Nicholas Havenga stresses that the metal will be used in the arts and industry.

ALASKA—Mining operations on the Seward Peninsula, north of Nome, will be hampered by the virtue of the shipping strike in West Coast ports that prevented supplies to be shipped before the winter's ice closed shipping. As a result, 1949 supplies cannot arrive until a good two-thirds of the open season has gone by.

WASHINGTON—Discovery of uranium bearing ore on the Olympic Peninsula has been reported. The find is in the Lake Quinault area.

CALIFORNIA—The bucket line dredge on the Trinity River, California, is being dismantled and shipped to the Minersville district where it will be operated by the Idaho-Canadian Dredging Company. Equipped with 9½ cu. ft. buckets, the dredge can dig 35' below water level.

TURKEY—A recent trade agreement signed between Turkey and the three Western Zones of Germany provides that Germany is to buy $75,000,000 worth of raw materials, largely ores and minerals.

SWEDEN—Late reports say that Sweden is quadrupling uranium production. An authoritative Stockholm newspaper says that uranium output from the Kvantorp oil shales is to be boosted from nine to 35 tons yearly.

TASMANIA—Seven thousand feet of drilling by Electrolytic Zinc Company of Australasia has disclosed extensions of existing orebodies at the Rosebery mine.

MOSCOW—A trade agreement recently signed between the Union of Soviet Socialist Republics provides for an exchange of an undisclosed tonnage of chromite with Norway during 1949.

GERMANY—Recent reports from Berlin indicate that the tenor of the uranium ore being mined in the Aue district of the Eastern Zone has increased considerably. For the past three years the ore was very low grade but since the new discovery men and materials are being rushed to speed up production.

MADRID—The first shipment of Spanish mercury to be shipped to Germany since the war is going forward. The amount will be 150 tons, which already has left Barcelona. Delivery is being made under a new trade agreement.

NEW YORK—Late January advice announced that a shipment of Yugoslav copper totaling about 3,000 tons would be received within the week. The dollars derived will be used to purchase U. S. machinery and other essentials. Yugoslavia wants to establish a $15,000,000 balance with the United States.

CHINA—The announcement of the end of Marshall Plan aid to the Chinese, except for a few exceptions on nearly completed projects, came as a blow of great magnitude. The $70,000,000 credit was allotted primarily to rehabilitate and develop tin and antimony mines.

BELGIUM—A number of zinc plants in the Liege and Campine areas have been blown in again raising to nearly 60 the number of units in operation in the country. Renewed activity is directly attributable to imports of zinc ores and concentrates, recently derived from the Bergamo, Italy, district.

WASHINGTON, D. C.—The four cent per pound import duty on copper into the U. S. is due to expire on March 31. Consequently, a bill has been introduced to recess the duty until March 31, 1951.

LONDON—The fourth Empire Mining and Metallurgical Congress will be held in London, England, from July 9 to 23.

CHILE—Activity in manganese is evident with the transfer of holdings to the Manganesos Atacamas. American capital is interested and work will be started on the lower grade ores with some type of beneficiation.

BRITISH COLUMBIA—The first unit of the new Reeves MacDonald Mines, Ltd., mill, just north of the international boundary, was reported to have turned over in February. The unit will handle 600 tons of ore daily and is the first of two.

SAN FRANCISCO—Half of a 200,000 ton consignment of iron ore has been shipped from Long Beach to Japan. Additional shipments of ore are now going forward under a contract from SCAP.

CHILE—Interest in the lead deposits of Salamanca is keen at this writing. Several good prospects are being readied and the possibilities of a small concentration plant being built are considered good.

WASHINGTON, D. C.—Economic Cooperation Administration's Paul G. Hoffman announces the freezing of funds to Indonesia pending the end of hostilities between the Indonesian Republic and the Dutch.

India Tightens Control Of Manganese Exports

Tightening control of manganese exports, the Government of India has announced that export licenses henceforth will be issued only to past exporters and in favor of mines. Quotas for each importing country will be announced by the Government from time to time, and all contracts must be within the Government-fixed quotas.

Of the 25,000 ton import quota for Germany, a balance of 13,000 tons remains available for immediate licensing. Under the new control, licenses will be issued only to those who produce evidence of a contract with the Joint Export-Import Agency of Frankfurt.

Effective February 1, priority allotment of railway cars was confined to holders of export licenses, shipping to countries included in the Government quota. It is hoped that by this restrictive action a substantially higher quantity of ore will be moved to ports in 1949 than was last year.

Tin Is New By-Product Of Lead-Zinc Ores

Following extensive experimentation, the Climax Molybdenum Company of Denver, Colorado, has reported favorable results in the production of tin as a by-product from lead, zinc, and other ores.

Initial operations are said to have been encouraging enough to warrant construction of a small plant which is scheduled for completion by mid-1949 at Climax, Colorado.

The new by-product is being obtained through the wet concentrating process.

Survey Agreement Between Brazil and U. S. Extended

A formal announcement by the U. S. Department of State reveals that the co-operative mineralogical-geological survey program between the governments of Brazil and the United States has been extended for a ten-year period.

The co-operative program, originally established in 1940, has for its general purpose the appraisal of mineral resources of Brazil, both as regards those which now constitute a part of the trade between the United States and Brazil, as well as those which may enter into the trade in the future.

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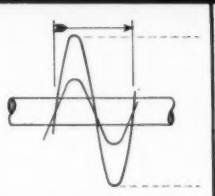
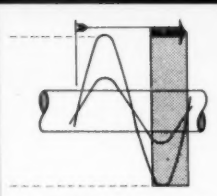
Up to 100% greater sand raking capacity, balanced with corresponding increase in overflow capacity.



CONVENTIONAL SPIRAL
PITCH = 50%



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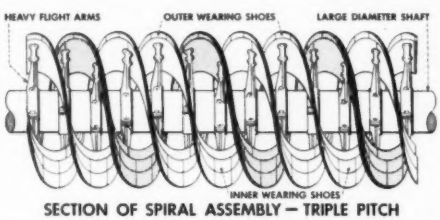

SECTION OF SPIRAL ASSEMBLY — TRIPLE PITCH

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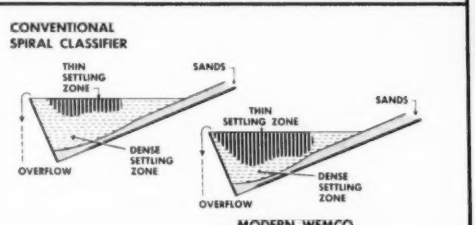
per revolution of spiral because increased pitch permits ***three*** spirals per shaft, hence 50% more conveying surface.



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WORLD MINING

Issued as an International Department of MINING WORLD

by American Trade Journals, 121 Second St., San Francisco, California.

A Miller Freeman Publication

President . . . MILLER FREEMAN
Publisher . . . W. B. FREEMAN
General Manager . M. F. HOLSINGER
Editor . . . JOHN B. DORSH, E. M.
Production Manager . E. B. HERINGTON
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Santiago, Antwerp, Stockholm, Cyprus, Tientsin, San Jose (Costa Rica), Baguio (Philippines), London, Tokyo, Frankfurt, Medellin (Colombia), Strangways (Victoria, Australia), Vancouver, Paris, Bangkok, Mexico City, Helsinki, Tananarive (Madagascar), Redruth (Cornwall), Oslo, Benares (India), Dersley (Transvaal, South Africa), Budapest, Singapore, Buenos Aires, Lisbon, Madrid, Ankara, Lima, Rome, Sao Paulo.

WORLD MINING is published the 15th of each month as a regular department of MINING WORLD and is also circulated as a separate section on a carefully controlled free basis to a selected list of management and supervisory personnel associated with active mining enterprises throughout the world.

New Portuguese Company To Operate Penedono Mine

A new company is being formed in Portugal for the purpose of placing in production the old Penedono gold mine, first explored by the Romans. The new firm plans to install machinery and equipment adequate for the extraction of 500 tons of ore daily, which should produce an estimated four kilograms of gold worth $6,400 and 30 kilograms arsenic worth $4,800.

At the present time, exploration of the old veins is being carried on by M. Cardoso Pinto, who holds the concession. Samples taken at the property so far have shown an average of eight grams fine gold per ton and six grams arsenic ton.

New 1,000-Ton Zinc Mill Starts Operation in B. C.

Culminating what might be called a 20-year period of preparation, Reeves-McDonald Mines, Ltd., is starting initial operations at its new 1,000-ton daily capacity mill, just north of the Washington State line in British Columbia.

Long known as a gigantic deposit of zinc-lead, Reeves-McDonald could well have entered production in 1929 had not the great October crash occurred, resulting in a base-metal price slump. This condition continued through the panic years and even until the late 1930's, requiring the war to raise metal prices to a point where a profitable operation could be maintained.

Stalemated during the war by a lack of skilled workers to place the property in production, Reeves-McDonald is just now emerging as British Columbia's second largest zinc-lead operation, led only by the Sullivan mine of Consolidated Mining & Smelting Company.

Company officials have announced that the plant will probably handle closer to 1,200 tons daily, with overall costs of not more than $2.50 per ton. With an average recovery value of $12.50 per ton expected, a net profit of $10 is indicated.

South African Steel Has 60-Year Supply of Coke

A government commission appointed to inquire into the country's coking coal reserves has come up with the announcement that South Africa's steel industry is assured of coke supplies for at least 60 years.

Several years ago, concern was expressed at the consumption rate of coking coal, particularly as a considerable tonnage was being burnt on boiler grates and not in blast furnaces. Now, the commission has established that approximately 160 million tons of straight and blend coking coal are yet to be mined at the Durban Navigation Colliery and from the Witbank No. 5 Seam.

Coke consumption, as estimated by existing steel producers, will be 95 million tons in the next 60 years. Thus, disregarding the likelihood of new discoveries, future industrial development is already assured of coke supplies, and have-not fears have been found to be groundless.

Turkish Government Plans Iron Ore Development

Plans are being formulated by Eti Bank, agency of the Turkish Government, for the large-scale development of the iron mine at Divrigi which supplies the Karabuk iron and steel works. American officials of the ECA who recently visited Karabuk believe that an increase in pig iron output would help Turkey to play a more active part in European recovery under the Marshall plan.

The two blast furnaces at Karabuk have a 350,000 ton capacity; one of these furnaces is being operated at slightly over one-half capacity, at present, while the other remains idle. The shortage of coke is a contributory factor in this situation; however, it is believed that if substantial tonnages of iron ore are forthcoming from Divrigi, it would be advantageous to divert coke from other industries to Karabuk furnaces.

To relieve still another unfavorable factor, the 1,100 kilometer haul from Divrigi to Karabuk is now being reduced to 800 kilometers by a new railway line.

United Asbestos Has Huge Deposit in Quebec

Diamond drilling at the Black Lake property of United Asbestos Corporation has indicated an estimated 50,000,000 tons, having an average grade of 4.25 percent asbestos. This tonnage is said to be only a small fraction of the ore present on the property which has an expanse of potentially favorable ground probably 12 times larger than the area to which it is limited by scope of drilling to date.

The area tested is 2,700' from north to south, of which 300' in the center is barren. Extent along the strike tested is 520' to a depth of 500'.

Recommendations have been made to the company for the construction of a 2,400-ton capacity plant, to be increased ultimately to 5,000 tons daily. Philip Malouf, company engineer, states that there is a better grade section within the drilled area of sufficient tonnage to operate a 5,000-ton plant for some years.

The task of draining the lake is contemplated as a comparatively simple task, as the water depth is only 5' for a considerable area, reaching 37' at its deepest point. The company has obtained surface rights on an adjoining 20 acres for plant construction.

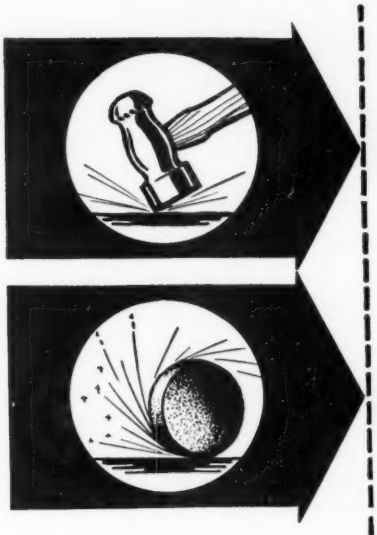
U. S. Has Plan to Obtain More African Manganese

A new plan has been initiated by the United States Department of Commerce whereby 2,576 tons of steel will be set aside monthly from February to September for use in making cars to transport South African manganese ore to tidewater.

The U. S. Munitions Board, which handles the government's war materials stockpiling, has announced that the plan may make it possible to get half of all stockpile manganese from South Africa. The tonnage needed for stockpiling has not been disclosed, but the board said that the steel guarantee plan might enable South Africa to increase its annual production by 250,000 to 300,000 tons.

Brazilian Plant May Get $10 Million U. S. Loan

It is reported that the steel plant at Volta Redonda in Brazil will probably receive a $10 million loan from the United States Export-Import Bank, resulting in a doubled production.



IMPACT

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AMSCO STANDARD MANGANESE STEEL

"The toughest steel known" resists abrasion well under severe impact. Here's a service comparison of liners in a Colorado gold mine.

MATERIAL	TONNAGE GROUND
Heat treated alloy steel	87,838
AMSCO standard manganese steel	131,729

AMSCO SPECIAL MANGANESE STEEL

For greater wear resistance than standard manganese steel . . . and to withstand shocks equally well.

Material	Service	Tonnage Ground
Standard manganese steel	6 mo.	17,256
AMSCO special manganese steel	10 mo.	24,618

AMSCO CHROMIUM-MOLYBDENUM STEEL

Where impact resistance is secondary to extreme abrasion resistance, use Amsco uniform analysis "chrome-moly."

Material	Cost per Ton Milled
Standard manganese steel	.007405
AMSCO chromium-molybdenum steel	.006839

In your grinding mill two powerful forces of wear are always there . . . impact and abrasion. The extent to which each of these forces is present depends on a number of factors that vary with every mine. Among these factors are: type and condition of ore, size and speed of mill, size and total load of balls or rods, and design of liner.

It is in the correct weighing of all these factors that our experience added to yours can be of tremendous service. As a result of Brake Shoe research and development, we can recommend the particular alloy to use for all of the internal castings of your mill . . . to give optimum resistance to impact or abrasion (according to grinding conditions) and thereby greater tonnage before replacement is necessary. Amsco now offers mill parts such as liners, grates, and feeder lips in a range of alloy steels to meet most combinations of impact and abrasion. The case histories on liners listed here show typical results when Amsco recommended steels are used.

All uses for Amsco castings in mines and quarries are described in Bulletin 743M

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View of the Sidney surface plant during the last summer that shows the modern mill with the warehouse and construction of the Quonset huts that serve as a compressor house, combination and machine shop and carpenter shop, and change house. The change house is a Noranda-type structure.

MAKING A MINE

The Sidney mine, long a small producer, recently has developed into a prominent position among the producers of the Coeur d'Alene district

By R. F. Hollis

Bunker Hill & Sullivan
Mining & Concentrating Company

The Sidney mine, premier producer of lead-silver-zinc of the Pine Creek area in the Coeur d'Alene Mining District of Northern Idaho, has, in less than six years, developed in a most spectacular fashion from little more than a prospect to a major enterprise. Its development has been viewed with interest for a number of reasons. Relatively large reserves of excellent milling ore have been developed in an area formerly considered by many geologists as unfavorable for ore deposition as it occurs in the Coeur d'Alenes in general. The orebody being exploited at present and designated the "east orebody" was discovered east of, and along the strike of a previously productive area now called the "west orebody." This is contrary to most of the recent major discoveries in the district in that they have been discovered at greater depth rather than along the strike of known mineralized zones.

In spite of the fact that it can be classified as a relatively small mine it is the third largest producer of zinc in the Coeur d'Alenes and ranks fifth in lead production. In addition to this it produces a substantial amount of silver and a minor amount of gold. An expensive development and construction program is nearing completion, all of which has been paid for out of earnings. Furthermore, substantial dividends are now being paid.

W. T. Simons is president and Malcolm Brown general manager of the company and these men are in large part responsible for the growth and present stature of the mine.

The mine is situated 14½ miles by road from Kellogg, Idaho, via a circuitous route. In an air line it is only 4½ miles southwest of Kellogg. Formerly operations were carried on near the headwaters of Denver Creek, a tributary of the East Fork of Pine Creek.

The new mill and the surface plant are at the portal of the 900 main haulage level or Red Cloud Tunnel. This location is 400′ lower in elevation and on the opposite side of the ridge from Denver Creek. The immediate area is drained by Red Cloud Creek, another tributary of the East Fork of Pine Creek.

Early History

The Sidney is not a particularly new mine. The first claims were located in 1896 and the company was organized in 1910. Interest at that time was centered around the Denver vein, a mineralized structure parallel to the Sidney vein. Some ore was produced intermittently. In 1921 the Sidney vein was discovered to the south of the Denver vein. This was a rather spectacular discovery in that high grade lead ore was exposed in the outcrop. Operations then began on this orebody at an accelerated pace. From 1925 to 1937 the Sidney Leasing Company mined this orebody from the surface to what is called the No. 8 Level through a maximum vertical distance of some 900′. The maximum horizontal length of the shoot was approximately 800′. Estimated total production during this period was 238,000 tons of ore containing in excess of 15% combined lead and zinc. The ratio of zinc to lead was approximately 2 to 1 and the silver ratio 0.36 oz. per unit of lead. This shoot, later called the "west orebody," was developed principally by three adits from the Denver Creek side and a 450′ shaft. Actually, the shaft was an inclined winze sunk from No. 5 Level —the lowest in point of elevation of the three adits.

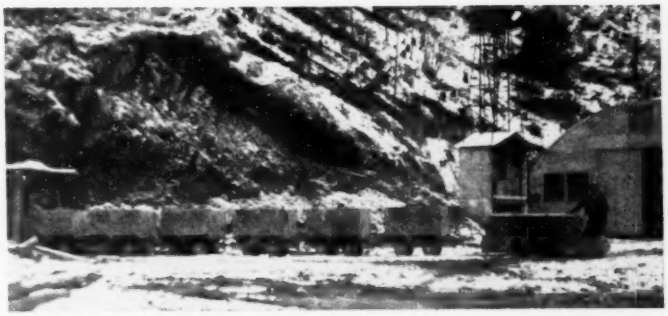
The ore was transported by a 3½-

mile aerial tram to the Sweeny mill, a custom plant operated at that time by the Bunker Hill & Sullivan Mining and Concentrating Company. Except for the years 1933 and 1934 production was practically continuous until 1937. Due to depressed metal prices, and apparently dwindling ore reserves, operations ceased early in 1938.

Assessments and Progress

In 1942 the original Sidney Mining Company, under the direction of William A. Beaudry, resumed control. Most of the early activity centered around No. 5 and No. 6 Levels east of the old workings where a small shoot, called the "intermediate shoot," was opened up. An assessment was levied against the stockholders in 1942 and in 1943 construction was started on a 50-ton mill at the portal of No. 5 Tunnel. This unit began operating early in 1944 and served until the new mill was completed in June of 1946.

Prospecting further to the east of the then only known orebody was initiated but, due to lack of finances, progress was slow. Late in 1942 the U. S. Bureau of Mines became interested in the district and surface-trenched the area by bulldozer. Following some promising surface disclosures a diamond drilling program was begun. Late in 1944 high grade zinc-lead ore was discovered. After sufficient holes had been drilled to substantiate the discovery and delineate the orebody it became evident that a major discovery had been made. Plans were then initiated to expand both mining and milling facilities. After some study it was decided by the management to build a new surface plant and mill on the east side of the ridge on Red Cloud Creek. This location was advantageous in that it was some 400' lower in elevation than the No. 5 Level and the orebody could be reached by a relatively short drift from this lower elevation. Furthermore, this location was more accessible from the main road and ample water was available for the mill and other purposes, conditions that did not exist on the Denver Creek side. This program was inaugurated in 1945 by the construction of a modern 250-ton mill which commenced operation in June, 1946. A road from the Denver Creek side was built to the mill to facilitate ore haulage by truck until such time as the drift to the orebody and the connecting ore pass were completed. This drift, now known as the Red Cloud Tunnel, was finished early in 1948. At the time of this writing a connecting ore pass has been holed through from the Red Cloud Tunnel to No. 5 Level and within a few days all the ore will then be transported through the Red Cloud Tunnel and the truck haul abandoned.



A train of muck at the portal waiting to dump into the coarse ore bin. Shown is the 3½-ton Atlas battery locomotive and six 45 cu. ft. Coeur d'Alene Hardware Ajax side dump cars with Eddie Coe, mine foreman, who has charge of the development and operation of the mine.

Red Cloud Surface Plant

The new surface plant is impressive and most certainly a credit to the management. Careful planning and well-constructed buildings indicate that the company officials have faith in the property from the standpoint of long continued operations. The amount of construction work accomplished in so short a time out of current earnings, plus substantial dividends paid on a relatively small tonnage, is a tribute to both mine and management.

An interesting feature of the surface plant is the use of Quonset huts for the compressor room, combination machine shop and carpenter shop, and change room. All are built on substantial concrete foundations. At the time of this writing considerable work remained to be done to complete the interior finishing. The change room is particularly interesting. It is being built along plans developed by Noranda Mines, Limited, of Canada. The change room is divided into two floors, a basement and upper floor, all of concrete construction. Change room and showers are on the upper floor. All street clothes are kept in lockers on the upper floor and work clothes are lowered into receptacles above the basement floor. With this arrangement the upper floor can be kept much cleaner, higher temperatures can be maintained in the basement for drying, and odors do not permeate the street clothes.

A central heating plant supplies steam heat to all the surface installations. Sawdust, which is purchased under contract from a local sawmill, is fed to a burner built by Western Foundry Company, Portland, Oregon. Considerable savings in fuel costs over other fuels are effected by using

The men who make the enterprise go. Malcolm Brown, general manager; Herb Reynolds, geologist, who takes the guess out of the development work; Bob Pruess, chief engineer, takes care of the engineering details; Archie McKinley, mill superintendent, overses an up-to-date metallurgical unit.

sawdust as it is a waste product available locally.

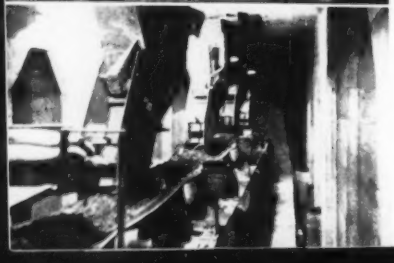
A small timber framing shed has been built to take care of mine demands. No plans are being made to build a sawmill at least for the present. However, a small carriage and a saw have been installed to do some ripping. All of the necessary lumber for mining and building purposes is purchased from various local sawmills.

A new warehouse has been built adjacent to the mill building. For lack of space it was built with four stories, all of which are conveniently served by an elevator. The mine offices are on the top floor; however, a separate building is planned for the future. The mill and rockhouse are extremely modern and designed for maximum efficiency. Both are built with ample concrete foundations and steel sheathed superstructure. The mill is especially interesting in that ball mill, flotation cells, and filters are on practically one level, thus long stairways are eliminated. The mill was designed to handle 250 tons. However, 275 tons per day is currently being treated.

TABLE I

	% Wt.	Assays Pb.	Assays Ag.	Assays Zn.	Distribution Pb.	Distribution Ag.	Distribution Zn.
Heads (calc.)	100.00	5.69	3.09	11.87	100.00	100.00	100.00
Lead concentrate	6.71	65.55	31.35	11.58	77.33	67.96	6.57
Zinc concentrate	20.41	4.28	3.78	53.08	15.29	24.92	91.24
Tails	72.88	0.58	0.30	0.36	7.38	7.12	2.19

Top: Interior view of the Sidney mill showing the one level plan that has proved so successful. Ball mill, flotation cells, and filters are, for all practical purposes, on the same level, thus eliminating stairways. Center: Keeping the coarse ore bin grizzly clean is a job that cannot be performed by a machine. Here George Mattson stands with his double-jack after a train has dumped. Bottom: Feeders paying ore onto the belt conveyor under the fine ore bin. Four of the feeders are shown in the picture.



Mine Equipment

Three compressors will supply mine air from the Red Cloud side as soon as foundations are completed in the new compressor room. One Ingersoll Rand type PRE compressor having 2,400 c.f.m. displacement, powered by a 350 hp. General Electric synchronous motor, has been installed and is now in operation. Two smaller compressors will be installed for standby service as soon as they can be moved from the Denver Creek side. One is an Ingersoll Rand type XRE with 1,200 c.f.m. disuplacement direct connected to a 175 hp. General Electric synchronous motor, and the other is an Ingegrsoll Rand type XRB, 600 c.f.m. displacement, belt driven by an 80 hp. General Electric induction motor. Ingersoll Rand stopehamers and drifters are used with 1½" Carset jackbits. One and one-eighth inch round alloy steel is used on the drifters and seven-eighth inch quarter octagon steel on the stopers. According to Malcolm Brown, general manager, Carset jackbits have been very satisfactory. The average length of hole drilled per bit is 250' and with the small and more cylindrical hole a 20% saving in powder has been effected.

Main line haulage on the Red Cloud Tunnel Level is adequately taken care of by a 3½-ton Atlas battery locomotive and 45 cu. ft. Coeur d'Alene Hardware Ajax side dump cars. Two 1½-ton Atlas type J and one 3½-ton Mancha type AX battery locomotives are used on the intermediate levels. For slushing in the scram drifts Ingersoll Rand electric slushers are used.

Approximately 45 men are required at present to maintain tonnage and keep up the desired development work. Labor shortages, while troublesome at times, have not been as serious as in the district in general. Attractive contracts and good ventilation and working conditions undoubtedly contribute to satisfactory labor-management relations. Edward Coe is mine foreman in charge of all underground operations.

Geology and Mineralogy

The phenomenal development of the Sidney mine in recent years has resulted in intensive geologic study of the Pine Creek area. The following is a brief geologic resume as explained by Veral Hammerand, geologist, who has spent considerable time in this area:

Bedrock at the Sidney mine consists of banded argillite of the Prichard formation. The Prichard formation in many parts of the Pine Creek district is complexly folded and broken by systems of westerly and northwesterly trending faults. Most of the vein fractures are oriented in a westerly and northwesterly direction parallel or nearly parallel to the faults. At the Sidney mine and at properties immediately adjacent to it, several zones of intricately folded argillite have been mapped. The intersection of the vein fractures with these zones of folding appears to have localized the largest and richest ore shoots.

Several mineralized breaks are known on the Sidney property, but exploration and mining has been confined largely to the Sidney vein. The Sidney vein is a northwesterly trending, steeply dipping structure that has been explored for a distance of 2,000' along the strike, and followed to a depth of 1,000' vertically below the outcrop.

Two ore shoots, mined for a distance of 700' and 760' respectively along the strike, have been discovered on the Sidney vein. Widths range from 2 to 20'. These shoots are opened to depths of 800 to 1,000' below the surface. Neither has been bottomed nor do they show appreciable changes in the character of the mineralization at depth.

The vein filling consists of rich bands of sphalerite and galena with considerable quartz accompanied by minor amounts of carbonate. Here and there iron minerals, pyrite and pyrrhotite, are present in the vein. These minerals, however, are not as abundant as in other Pine Creek veins.

Hydrothermal alteration along the Sidney vein is inconspicuous. The vein walls, as well as unreplaced fragments of argillite, commonly appear fresh and unaltered. Locally, "bleaching" or alteration of the black argillite to tones of gray, green, and tan has been observed, but its signifi-

cance and its place in the mineral sequence is not known.

Mining Methods

Exclusive of development ore, approximately 90% of all the ore mined is stoped by a shrinkage system using ore passes and scram drifts with slushers for muck removal. Cut and fill stopes are used in cases where the hanging wall is slabby and when the orebody is too wide for shrinking.

The shrinkage stopes at present are prepared as in Sketch A. It will be noted that both the scram drifts and the main haulage levels are driven in ore. Ore passes are driven from the footwall side of the scram drift at 20' intervals and arched back to the ore. By this means steel pegs with a right angle hook can be driven into a drill hole on each side of the ore pass in the scram drift. In order to stop the flow of muck from the ore pass a piece of lagging can be laid on the hooks to serve as a temporary block. A somewhat different approach will be inaugurated in all stope production in the future. Sketch B shows the contemplated procedure which is expected to speed up pillar recovery over the previous method and keep the main haulage level out of the ore. The main haulage level will be driven with a connecting raise to the scram drifts, all of which are in the footwall. Ore passes will be driven from the side of the scram drifts to the ore at 20' intervals. A timber mat will be laid down and waste filled on the bottom of the stope up to the angle of repose.

Incentive System

In order to speed up mining the management has worked out a contract system in the shrinkage stopes. When stope preparation is complete mining starts on contract. Contract payments are based on cubic feet of ore broken in the stope and delivered to the main haulage level. As soon as mining in any stope is complete, the contract stops and the remaining ore is pulled out on day's pay. This system has been satisfactory to both the company and the miners.

The mine is adequately ventilated by natural drafts through the Red Cloud Tunnel, various raises, and intermediate levels on the Denver Creek side. In fact, ventillation is so efficient that during the winter months temperature in the mine is quite low. All tramming is done with battery locomotives as the motive power. The length of the tram from the ore pass in the Red Cloud Tunnel to the portal is 2,500'. Six 45 cu. ft. side dump cars make up a train.

The Mill

An article appearing in MINING WORLD, September, 1946, covers mill operation in detail as performed shortly after the new mill was started up. Briefly, the flow sheet is as follows:

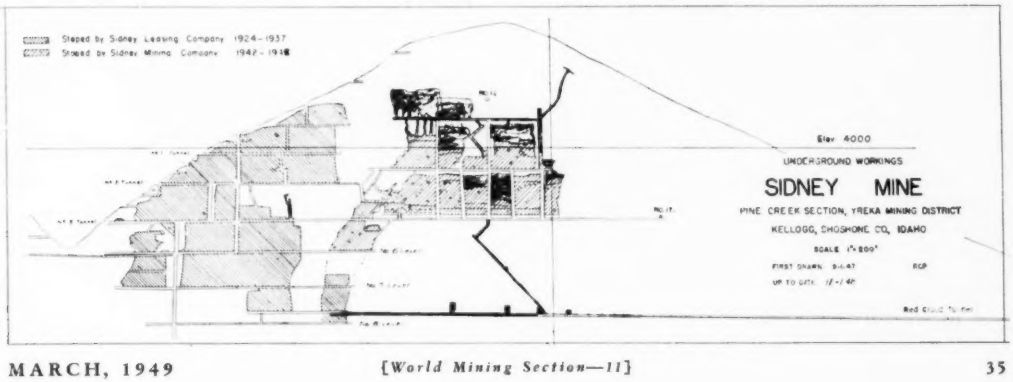
Mine ore from a 300-ton coarse ore bin is brought on a 36" conveyor belt to a 4 x 5' Ripl-Flo vibrating screen with 3" openings. The oversize is crushed in a 15 x 24" Traylor type H jaw crusher. Crusher product joins the screen undersize and is conveyed to an Allis-Chalmers Aero-Vibe double-deck screen with 1¼" openings on the top screen and ½" openings on the lower screen. Oversize from both decks is crushed in a 4' Symons short head cone crusher. Undersize from the screen joins the crusher discharge and is thence conveyed to the 700-ton mill bin. A shuttle conveyor belt on the top of the bin facilitates even distribution of feed to the bin.

From the fine ore bin mill feed is conveyed to an 8' x 48" conical ball mill built by the Union Iron Works. Feed is weighed as it is conveyed to the mill by a Merrick Weightometer. The ball mill is in closed circuit with a 6 x 24' Dorr type F classifier. Classifier overflow is pumped by a 2" Hydroseal pump to the lead circuit. All flotation cells are 36" Galigher Agitair cells. The lead circuit consists of 6 rougher cells, 4 scavenger cells, and 4 cleaner cells. Scavenger concentrate and cleaner tails are returned to the roughers. Rougher concentrate is cleaned twice. Lead rougher tails are conditioned and pumped to the zinc circuit which consists of 8 rougher cells, 6 scavenger cells, and 8 cleaner cells. The zinc circuit is essentially the same as the lead in that the scavenger concentrate and cleaner tails are returned to the roughers and the rougher concentrate is cleaned twice. All concentrates are elevated by bucket elevators which have performed very satisfactorily.

Calvin Ward stands beside the Symons 4' short head cone crusher that provides the secondary crushing medium for the mill.

Lead concentrates are thickened in a 20 x 8' Wemco thickener. Thickener underflow is elevated to a 3-leaf 6' Eimco filter. Filter cake drops directly into a storage bin for shipment by truck to the lead smelter in Kellogg. Zinc concentrates are thickened in a 30 x 8' Wemco thickener. The thickener underflow is elevated to a 7-leaf 6' Eimco filter from which the cake drops directly to the storage bin. Zinc concentrates are hauled by truck to the electrolytic zinc plant at Silver King.

A Roots-Connersville vacuum pump furnishes the vacuum for both lead and zinc filters. Its performance has been completely satisfactory, both


Stoped by Sidney Leasing Company 1924-1937
Stoped by Sidney Mining Company 1942-1948
Elev. 4000
UNDERGROUND WORKINGS
SIDNEY MINE
PINE CREEK SECTION, YREKA MINING DISTRICT
KELLOGG, SHOSHONE CO., IDAHO

from the standpoint of mechanical performance and simplicity. No barometric legs or filtrate pumps are necessary.

Coarser Grinding Practiced

Substantially no changes have been made in the mill since operations started in 1946. Some operating changes have been made in the ball mill classifier circuit with the trend to coarser grinding. Early tests indicated that grinding to 90% minus 200 mesh would be necessary to effectively liberate the values. However, in so doing, considerable fine zinc was produced which was difficult to depress in the lead circuit. Reagent application failed to remedy the situation and, as a consequence, attention was turned to possible changes in grinding. Accordingly, steps were taken by Archie McKinley, mill superintendent, to grind coarser and check results with grinding. Eventually classifier overflow was stepped up from 32% solids to 44% solids and rake speed increased, all of which resulted in a much coarser overflow. Grinding was reduced from 85% minus 200 mesh to 70% minus 200 mesh. This effectively reduced the zinc content in the lead concentrate and lowered the final tailings. The detrimental effects of overgrinding apparently offset any increased liberation due to finer grinding. By coarser grinding 275 tons per day can be comfortably treated in a plant primarily designed to treat 250 tons.

The following reagents are used in the lead circuit expressed in pounds per ton: zinc sulphate, 0.64; Aero Brand cyanide, 0.66; soda ash, 0.45; Z-3, 0.04. A mixture of 75% amyl alcohol and 25% Barrett No. 4 is used for frother. Less than .01 pound per ton is required. In the zinc circuit the reagent requirements are 2.0 pounds per ton of copper sulphate; 0.7 zinc sulphate; 0.18 Z-3; 0.05 Barrett. The copper sulphate addition is interesting in that every effort to reduce consumption below 2 pounds per ton only results in serious losses of zinc in the tailings.

The metallurgical balance, representative of current mill operation, is given in Table I.

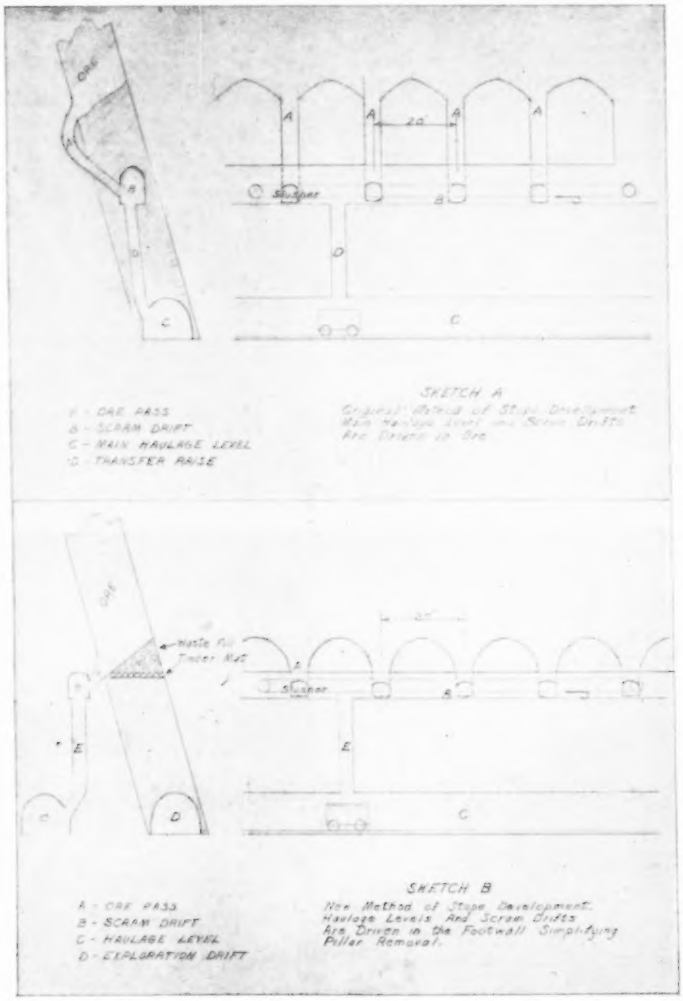
Operating personnel, in addition to Archie McKinley, mill superintendent, consists of a total of 3 operators, 3 helpers, 1 swing man, 3 crusher men, 1 head repairman, and 2 repairmen. The mill operates seven days a week and the men work six days. The swing man relieves mill operators and helpers on their off days.

Company Organization

As the Sidney is a typical small but highly productive mine, its organization is of interest because it is similar to many of the Coeur d'Alenes' smaller mines. The Board of Directors responsible to the stockholders are: W. T. Simons, president; Wm. A. Beaudry; E. K. Barnes; Myron Ross; and Charles A. Power. Fred E. Marler is secretary-treasurer, and Joyce Hoffman is assistant secretary. Malcolm Brown is general manager in charge of operations and is assisted by Archie McKinley, mill superintendent; A. W. Legard, master mechanic in charge of the mechanical and electrical department; Edward Coe, mine foreman, and Robert Pruess, chief engineer in charge of the engineering and geology department.

The main offices of the company are in the Idaho First National Bank Building, Kellogg, Idaho. A new building is under construction in Kellogg which will house the main office and in addition it will be used as a warehouse. Company buses used in transporting men to and from the mine will also be stored here.

The Sidney mine, which for so many years had an in-and-out existence, now appears to have shaken off its "growing pains" and emerged a major producer in the district. Little doubt now remains but that it will continue to produce for a number of years. Its remarkable record accomplished in so short a time has stimulated activity in the Pine Creek area.



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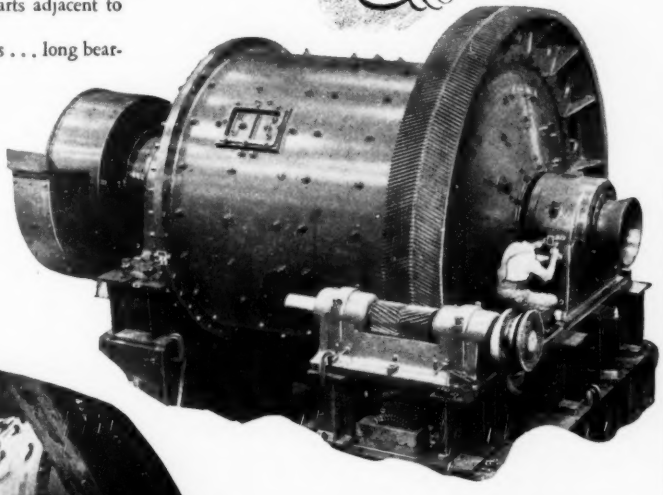

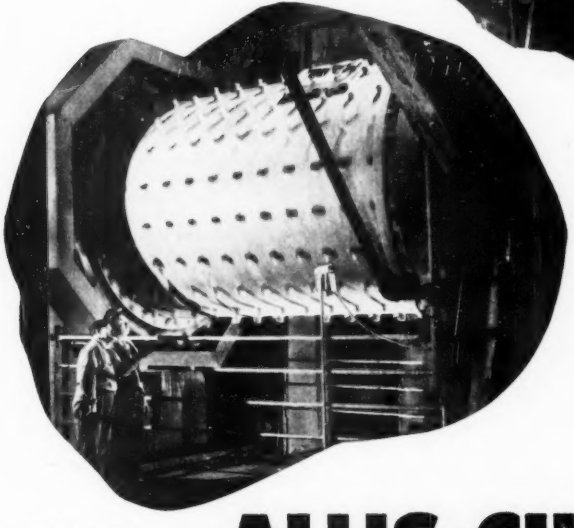

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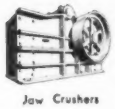
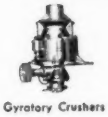
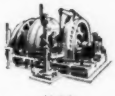

Jaw Crushers


Gyratory Crushers

Vibrating Screens

Kilns, Coolers and Dryers


Hoists

. . . and Other Equipment for the Crushing, Cement and Mining Industries

NEW PROSPECTORS IN THE HILLS

High speed exposure of bed rock at greatly reduced costs becomes a reality in a program undertaken in Idaho by the Hecla Mining Company

How the Hecla Mining Company, operating in the Coeur d'Alene district, Idaho, cut the cost of prospecting and exploration work by use of an International TD-14 crawler-type tractor mounting an 11' bulldozer, will be of interest to other operators faced with similar problems.

The program was laid out and executed by Robert E. Sorenson, chief geologist, Hecla Mining Company, under the direction of L. E. Hanley, president and manager, and has been carried out successfully through two open seasons, 1947 and 1948.

The saving in time and money plus the type of job done by use of the bulldozer has proved beyond the shadow of a doubt that the equipment is capable of doing good work in the toughest kind of country and other companies in the same district have undertaken exploratory trenching with bulldozers. Among these are the Sunshine Mining Company and the Palisade Mining & Milling Company in the Pine Creek area.

The Problem

The Hecla Mining Company recently acquired a group of claims in the Rock Creek drainage lying east of Wallace, Idaho. The terrain is typical of the high mountain country and is made up of knife-back ridges, old glacial cirques, and lower slopes consisting of a deep mantle of soil and talus that prevents examination of the bedrock. Even on the crest of the ridges bedrock exposures are few and far between.

Another difficulty facing the geologists who wished to make a detailed surface examination was that of getting into the area to work. It took two to four hours of walking with a back pack to attain the working places. Underbrush, wind-falls, and down timber added to the work of getting into the country to be explored.

A TD-14 International crawler-type tractor engaged in pushing a dozerload over the edge of a sidehill cut. Although this picture was not taken on the Hecla project, it illustrates the use to which the tractor mentioned in the article was put.

The aim of the program was to prospect a large area of the Coeur d'Alene Silver Belt lying to the east of the more productive mines that has interesting possibilities and indications.

The Solution

The first task of the bulldozer was to cut jeep trails along the ridges to permit easy access to the area. Trails were dozed in a few days and the results paid off immediately in that the men no longer spent half of the working day getting to and from work. An hour's travel in a jeep now put the most isolated part of the area within reach of the office.

These trails were run into all the working areas and preliminary geological examination followed which was employed to lay out the general plan for the prospecting campaign.

The Execution

All prospecting was done on ridges and sidehills. In prospecting the ridges, a cut was put in just below the brow of the ridge to make for easy dumping and thus allow quicker completion of the cuts as the excavated soil and talus would run down the slope without further assistance from the blade.

The width and depth of some of the cuts are astonishing. The height of bank carried generally was from 8 to 12' but in some places banks 25' high were cut. Widths also varied greatly. The average width of cut is from 20 to 25' but here again great variance is found for in some cuts a width of 40' or more is recorded.

Four ridges have been prospected thus far for varying lengths, the longest being trenched for a distance of nearly 6,000'. A total of 5.43 miles of trench has been cut and 14.4 miles of jeep trail established since the beginning of the campaign.

Comparative costs for the seasons 1947 and 1948, total footage of trail and trench, and other data, are shown in the accompanying table. The figures prove the contention that the method is cheap and the results effective.

The advantages of the program from the geologists' viewpoint lies in the fact that the structure is laid bare, thereby offering an excellent chance to study the formation, schistosity, mineralization, and other features. Added attractions are the fresh, and, in most places, unaltered bedrock open to scrutiny and the ease with which sampling can be accomplished.

Practical Application

The Hecla Mining Company at present is driving a long exploratory adit known as the Rock Creek tunnel. The line of the adit is roughly parallel to one of the ridges that has been systematically prospected by trenching. Plotting of the geology in the trench has proved that a rough correlation can be made between the surface and the showings in the adit, even though the back of the drive is between 400' and 800' below the surface. By analogy, surface indications in other trenches can be plotted at hypothetical depths and a much better picture of the geology of the area can be realized.

To quote Mr. Sorenson, "The project has proved successful."

SUMMARY OF ROCK CREEK BULLDOZING
1947-1948

The following includes the direct cost of bulldozing only; i. e., the rental of the dozer and the time of the operator—all of 1947 and to December 1, 1948:

Year	Bulldozer hours	Rate per hour	Road built: feet	Trenches dug: feet	Total cost
1947	779	$7.50	56,960	12,385	$ 5,842.50
1948	787.5	8.50	19,100	16,325	6,693.75
Totals	1,566.5		76,060	28,710	$12,536.25

Year	Work	Total cost	Cost per foot
1947	56,960 road	$2,799.24	$0.049144
	12,385 trench	3,043.26	.245721
1948	19,110 road	1,269.31	.066456
	16,325 trench	5,424.44	.332278

Both years total—14.4 miles road and 5.43 miles trenches.
For division of cost five feet of road equals one foot of trench.

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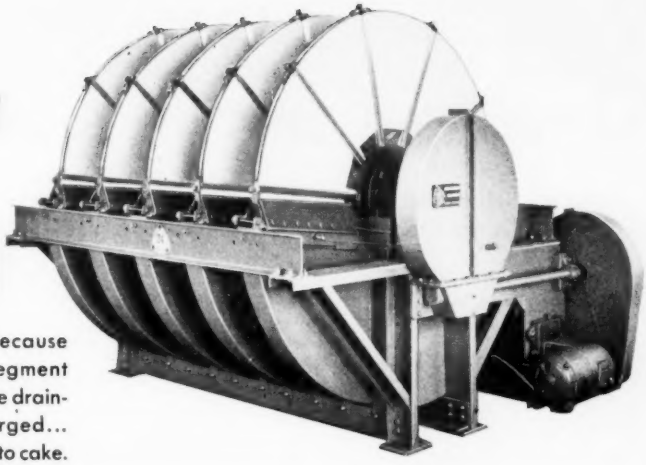
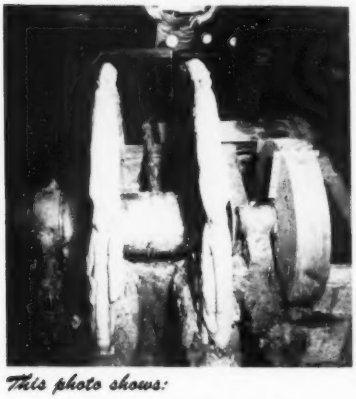


Thicker and ***Drier*** filter cakes because PATENTED grooves in filter segment provide ***complete, positive*** filtrate drainage just ***before*** cake is discharged... prevents "blow-back" of filtrate into cake.



This photo shows:

Zinc feed	(45% moisture)
Filter cake	(8% moisture)
Feed per hour	1¼ Tons
Filter size	4'-Two Disc

FREE FILTERING TESTS

The Denver Ore Testing Division will conduct tests without charge to determine:

(a) Filtering rate of material.
(b) Size of filter required.
(c) Type of filtering media needed.
(d) Optimum speed.
(e) Moisture expected in cake.
(f) Vacuum equipment required.

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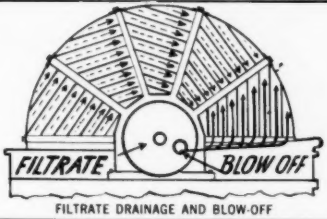
Patented grooves in filter segment drain direct to "suction and blow-off tube" which extends along leading edge of segment. This design increases suction efficiency... collects thicker, more uniform cake... means positive drainage just *before* "blow-off" and discharge of cake.



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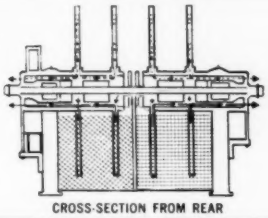
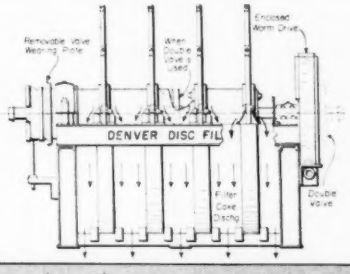
Double valves and divided tank can be provided... gives flexibility where two products are being treated. Use of two outlets permits separation of filtrates (strong solution from weak solution) where washing cycle is used... gives higher flow capacities if desired.



CROSS-SECTION FROM REAR

CONSTRUCTION. .

Wearing parts are protected and easily replaced. Bearings are protected from muck and dirt. Tank and frame are double-welded steel construction. Filter is compact... gives greater filter area in less floor-space, less head room.



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LEAD AND ZINC IN BIZONIA

With smelter output more than doubled since the division into zones, mining also shows marked expansion and further increase expected

Mine production in Bizonia is to be increased to 50,000 tons recoverable lead and 62,000 tons recoverable zinc by 1949-50. Additional imports of lead and zinc concentrates are necessary to meet requirements of smelting plants. Consumption of lead and zinc provided for also necessitates imports of lead and zinc metal.

Prior to the war, Germany was one of the most important consumers of lead and zinc in the world. Supplies and consumption of lead and zinc during the period 1929-1938 were on an annual average basis as shown in Table No. 1.

The figures reveal that, in spite of the not unimportant German mine output, lead as well as zinc had to be imported to a considerable extent in ores and as refined metal. It must be pointed out in this connection that a good deal of the zinc imported during those years had been derived from zinc ores, raised in that part of Upper Silesia belonging to Germany and was processed by smelters situated in Poland on German account. During the war zinc consumption zoomed to 300,000 tons annually, while the consumption of lead declined to about 165,000 tons in 1942 in comparison to the pre-war period.

Divided according to districts, the output of the German lead and zinc mines during 1936-1938 was according to Table No. 2.

The end of the war and the division of Germany into zones resulted in a complete dismemberment of the German metal industry, which had so far been worked as a unit. The lead and zinc mines in Upper Silesia, in Saxony, and near Mansfeld were incorporated into the Russian zone or the territory which was preliminarily surrendered to Poland. The greater part of the Harz and Rhenish mines are situated in those parts of Germany which have been integrated into Bizonia.

Lead and zinc mining in Western Germany is very ancient and has never quite ceased. The devaluation of the pound sterling and the U. S. dollar in 1931 and 1933, respectively, caused the German lead and zinc mine production to become unprofitable during the last pre-war decade. Government subsidies (so-called premiums on output) were granted to the mines in order to support and maintain them.

During the war and especially in the postwar period lead and zinc prices have strikingly increased on international markets, the average quotation for lead during the two decades preceding the war amounting to £20 per long ton and for zinc to £21 per long ton, while in November 1948 the price of lead was £112 and of zinc, £92. During the first postwar years, German metal prices remained virtually fixed at their prewar level. Shortly prior to the introduction of the new currency, they were adjusted to the international level.

The German prices of zinc and lead

Table No. 1

1,000 metric tons	*Yearly Average 1929–1938*	
Production from:	*Lead*	*Zinc*
Home ores	61.0	61.4
Foreign ores	53.9	40.0
Home old and scrap material	22.0	10.0
Foreign old and scrap material	6.0	4.0
Unrefined metal imported	2.0	—
Imports of refined metal	67.9	97.5
	212.8	212.9
Exports of refined metal	15.3	12.1
Supplies	197.5	200.8
Exports of semi-finished manufactures	5.5	24.0
Exports of metals in finished manufactures and products of various industries	24.5	26.0

Table No. 2

1,000 metric tons	*Yearly Average 1936–1938*	
	Lead	*Zinc*
Rhenish district	23.0	65.0
Harz district	33.0	43.0
Upper Silesian district	17.0	77.0
Bavarian-Saxonian district	1.0	1.0
Mansfeld district	4.0	5.0
	78.0	191.0

Table No. 3

Mine Production in Bizonia

	(Recoverable metal content) (Monthly averages in metric tons)	
	Lead	*Zinc*
Year 1946	1,260	1,840
Year 1947	1,230	1,860
I. Half Year 1948	1,430	1,770
II. Half Year 1948*	2,250	2,830
Year 1948*	1,840	2,300

* Partly estimated.

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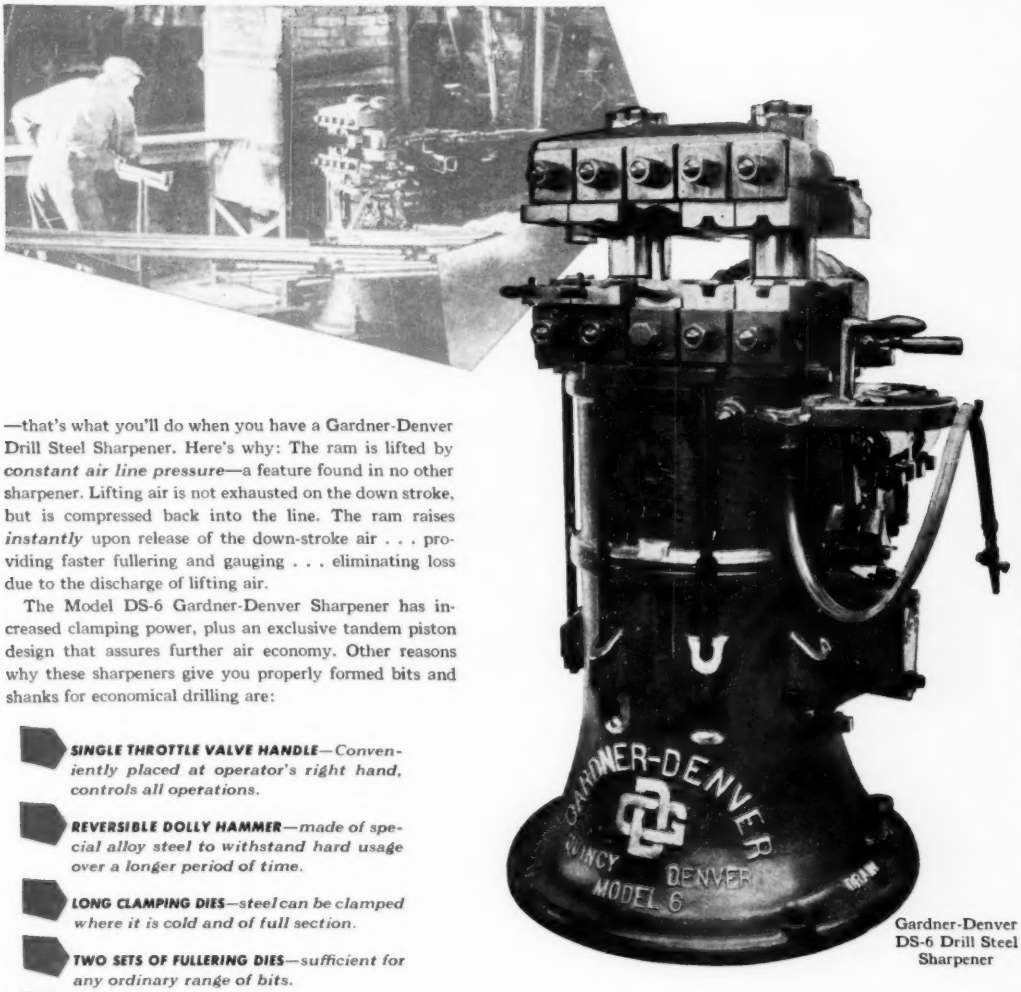

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are at present 1,250 Deutschmarks and 1,510 Deutschmarks respectively. These prices enable the lead and zinc mines in Western Germany to raise lead and zinc ores profitably. Since the end of the war, lead and zinc ore production has developed as shown by Table No. 3.

In addition in the French zone, a monthly production of approximately 150 tons lead and 300 tons zinc in concentrates is recorded at present. The table shows that a considerable recovery in mine output of lead and zinc has taken place during the second half of the year 1948. This is mainly due to the general improvement of economic conditions since the currency reform. The chief lead-zinc mines of Bizonia are set forth in Table No. 4.

The Stolberger Zinc AG. fur Bergbau und Huttenbetrieb is at present developing a new low-grade lead-zinc mine at Maubach near Aachen. A pilot concentration plant, which has been erected, is to produce from 18,000 tons ore to be mined monthly about 400 tons lead and 250 tons zinc concentrates. If this pilot plant production proves successful, a monthly crude ore production of 90,000 tons will be provided for.

In addition to the above-mentioned mines, zinkiferous pyrites are produced by Sachtleben AG. fur Bergbau und Chemische Industrie from its Meggen mine. The zinc content of these pyrites is recovered after they have been roasted either in the form of zinc oxide or in the form of zinc pigments (lithopone) produced from the cinders. The 300,000 tons of pyrites annually mined in Meggen contain about 20,000 tons of zinc. The zinc in oxide produced from the cinders, amounting to about 12,000 tons per annum, is chiefly converted by the zinc smelters of Bizonia into zinc metal.

The Bizonal mine output is to be increased to such an extent that a production of 50,000 tons recoverable lead content and 62,000 tons recoverable zinc content, including the French zone, will be reached in the year 1949-1950. In addition, 8,000 tons of recoverable zinc are expected to be available from pyrite cinders for smelting purposes. Table No. 5 gives a survey of the smelter production in Bizonia since the end of the war.

Also the smelter production increased considerably after the currency reform. But it must be pointed out that more than fifty percent of the lead production during the second-half year of 1948 was produced from old and scrap material. Further increases of smelter output are also contemplated for the year 1949-1950, when 85,200 tons of zinc and 75,000 tons of lead are to be produced. As concentrates from mines in Bizonia and the French zone will be inadequate to meet the requirements of the smelting plants, annual imports of an additional 25,000 tons lead and 15,000 tons zinc in concentrates are expected to be available. The capacity of the lead and zinc smelters in Bizonia is sufficient to secure this production, but repairs and modernization of plants are necessary. The maximum output reached by Western German smelters amounted to 172,000 tons of lead and 159,000 tons of zinc annually, of which 45,000 tons of lead had been produced in the French zone.

Industrial planning for Bizonia provides for an increase of consumption to 120,000 tons lead and 140,000 tons zinc in 1953, compared to 67,000 tons lead and 90,000 tons zinc at present. As it is unlikely that sufficient quantities of lead and zinc concentrates will be available for a corresponding increase in smelter production, some lead and zinc metal imports must be arranged to meet total requirements.

Table No. 4

Company	*Mine*	*Location of Mine*
Oberharzer Berg-und Huttenwerke	Grund	Bad Grund
Unterharzer Berg-und Huttenwerke	Rammelsberg	Rammelsberg bei Goslar
Stolberger Zink AG. fur Bergbau und Huttenbetrieb	Vereinigte Bastenberg und Dornberg	Ramsbeck
Stolberger Zink AG. fur Bergbau und Huttenbetrieb	Consolidierte Weiss	Bensberg
Stolberger Zink AG. fur Bergbau und Huttenbetrieb	Flotation Diepenlinchen	Diepenlinchen
Stolberger Zink AG. fur Bergbau und Huttenbetrieb	Ernst	Wiesloch (Baden)
Stolberger Zink AG. fur Bergbau und Huttenbetrieb	Gluckstha1	Binzenbach
Gewerkschaft Stein V.	Augusta-Viktoria	Marl-Huls
AG. des Altenbergs fur Bergbau und Zinkhuttenbetrieb	Luderich	Untereschbach
Gewerkschaft Mechernicher Werke	Mechernich*	Mechernich
Gewerkschaft Glanzenberg	Glanzenberg	Silberg (Westfalen)
Flotations-Gesellschaft m. b. H.	Viktoria Grosse Burg	Littfeld Altenseelbach

* Lead only.

Table No. 5

Smelter Production in Bizonia

	(Monthly averages in metric tons) *Lead*	*Zinc*
Year 1946	1,520	1,240
Year 1947	2,030	1,800
I. Half Year 1948	2,450	2,900
II. Half Year 1948*	6,000	4,000
Year 1948*	4,220	3,450

* Partly estimated.

Nicaraguan Firm Expects Increased Output in '49

Increased production following completion of hydro-electric facilities is expected in 1949 by La Luz Mines, Ltd., operator of a gold mining concession about 90 miles west of Puerto Cabezas, Nicaragua. The company's reduction plant, which started work in 1939 with an initial 300-ton capacity, has now had its capacity increased to 1,600 tons.

Besides the problem of insufficient power, another has been the handling and crushing of the sticky ore in the excessively wet seasons. A washing plant has now been installed to relieve this situation.

La Luz Mines, in addition to its Nicaraguan properties, holds options on mines in Costa Rica and Honduras. It has also been an investor in Eureka Corporation, Ltd., operating in Nevada.

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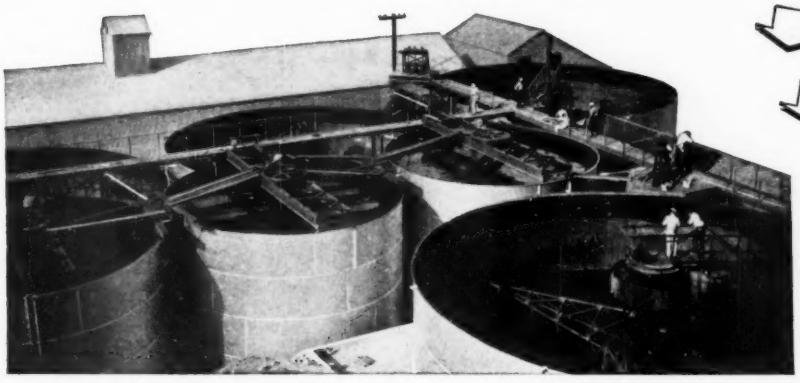

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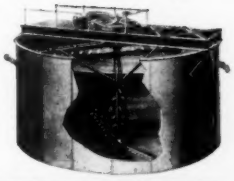

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PROMINENT MEN IN INTERNATIONAL MINING

Alan C. Jephson, superintendent of American Smelting & Refining Company's electrolytic zinc plant at Corpus Christi, Texas, was a recent visitor in Australia. Born in Tasmania, Jephson was formerly with Electrolytic Zinc Company of Australasia.

Dr. Alaeddin M. Aksoy, a graduate of M. I. T. and formerly chief metallurgist for the S. K. Wellman Company, Cleveland, Ohio, is now employed by Eti Bank in Ankara as a project engineer. His present work is with plans for new concentrators, now under construction in Turkey, and projects to be realized under ERP.

H. Hey, managing director of Electrolytic Zinc Company of Australasia, has been appointed president of the Australian Institute of Mining and Metallurgy for 1949.

A. G. Robertson has been named refining superintendent at Consolidate Mining & Smelting Company, Trail, British Columbia, succeeding the late *F. C. Ransom*.

A. E. Place, mining engineer of Boulder City, Nevada, is now in charge of mining properties for the Compania Minera Aradossa in the Sierra Las Damas of northeastern Chihuahua, Chihuahua, Mexico. He may be addressed c/o the Chihuahua Foreign Club, Apartado 68, Chihuahua.

Harold C. Haughton, formerly with Benguet Balatoc Gold Mining Company in the Philippines, is now with the Bonanza Lead mine at Colville, Washington.

John J. O'Shea, formerly with the Fairbanks Exploration Company in Fairbanks, has been appointed assayer in charge of the laboratory of the Territorial Department of Mines at Anchorage, Alaska. He succeeds *L. A. Dhaner*, who resigned to accept an appointment as mining engineer with the Cyprus Mining Corporation.

Dr. N. A. Boutakoff of Kern Trinidad Oilfields, Ltd., has been appointed senior geologist to the Department of Mines, Victoria, Australia.

Cihat Barut, graduate of Stanford University and for the past four years metallurgist at the M.T.A. Institute in Turkey, has been transferred to the Board of Inspection of the Prime Ministry. In his new position, he will act as technical advisor on the inspection of metallurgical plants.

Dr. C. E. Marshall of University College, Nottingham, England, was recently appointed professor of geology at Sydney, Australia.

Dr. R. T. Prider has been appointed professor of geology at the University of Western Australia.

Frank N. Wright, formerly with the Mudd-Wiseman mining interests of Los Angeles, and *John L. Alexander*, manager of the Carlota Copper Company, Miami, Arizona, have become associated in consulting engineering work and mine development in Mexico.

F. A. Roberg, after investigating tin properties in Malaya for the past two years, has returned to Australia.

Charles M. Brinckerhoff, formerly general manager of the Andes Copper Mining Company, was recently appointed general manager of the Chile Exploration Company at Chuquicamata, Chile, succeeding *Mat Sample*, who retired after 35 years with the firm. Succeeding Brinckerhoff at Andes Copper is *N. F. Koepel*. *D. M. Dunbar*, who had been assistant general manager at Chuquicamata, has been promoted to assistant to the executive vice-president of both companies in New York.

Dr. W. E. Cockfield, director of the Geological Survey of Canada for British Columbia and the Yukon, is now in New Zealand, where he is representing the Department of Mines and Resources at the Pacific Science Congress.

Sir Clive Ballieu, visiting Australia from England, recently inspected Broken Hill Proprietary's Port Pirie works in South Australia to discuss plans for expansion.

William D. Lord, Jr., has been appointed mine superintendent of the Chojlla mine in Bolivia, operated by the International Mining Company, an enterprise of W. R. Grace & Company, New York.

R. F. Goodwin has been elected president of the newly formed firm, Asarco Exploration Company of Canada, Ltd., an American Smelting & Refining Company subsidiary.

J. G. Pearcey, formerly mine manager of Silbak Premier Mines, Ltd., in British Columbia, has renewed his affiliations with the American Smelting & Refining Company and is now attached to the company's offices at Salt Lake City, Utah.

Vernon L. McCutchan, manager of Cerro de Pasco Copper Corporation's operations since 1944, has retired. Succeeding him is *A. Russell Merz*, who was assistant manager. Prior to joining Cerro de Pasco in 1945, Merz was assistant general manager of the Tin Processing Company.

Phillip Oppenheimer has been appointed a director of the Consolidated African Selection Trust, succeeding his father, the late *Otto Oppenheimer*.

W. E. Bennett has resigned as managing director of the Louvicourt Goldfield Corporation of Quebec to take a position with Steep Rock Iron Mines, Ltd., operating in Ontario. *John Knox, Jr.*, has been appointed resident manager to take full charge of the property.

Dr. Paul Ramdohr, ore microscopist from Berlin, is now in Australia, working in association with *Dr. F. Stillwell* at Melbourne University.

D. Humphreys, manager of Australian Blue Asbestos Company at Wittenoom Gorge, Western Australia, has resigned and is now visiting in England.

Dr. A. C. Skerl, who has spent the past two years on investigations in the Cariboo district of British Columbia, has opened an office as consulting geologist at 1007 Royal Bank Building, Vancouver.

Charles L. Bradbury, former operator of the San Pedro mine in New Mexico, is now residing in Mexico and may be addressed at Avenue Ejido No. 9, Desp. 42, Mexico, D. F.

Nick R. Hurley, for the past several years associated with Cie. Aramayo de Mines en Bolivie at La Paz, has resigned his position to return to the United States. His new address is 1510 Mathews, Fort Collins, Colorado.

General Silvio Raulino de Oliveira, president of the National Siderurgical Company of Brazil, has been in the United States in connection with additional financing for the Volta Redonda steel plant.

Howard F. Keller, general manager of the Bolivian Tin & Tungsten Mining Corporation, has had a change of address to Huanuni, Bolivia.

L. M. Abel, formerly with Emperor Mines Ltd., Fiji, is visiting Canada and the United States before taking up his new position as mill superintendent for the Cyprus Mines Corporation at Nicosia, Cyprus.

SEND IN YOUR NEWS

Have you changed your position recently, or do you have up-to-the-minute news on a mining operation in your country? If you have we would be very interested in receiving this information.

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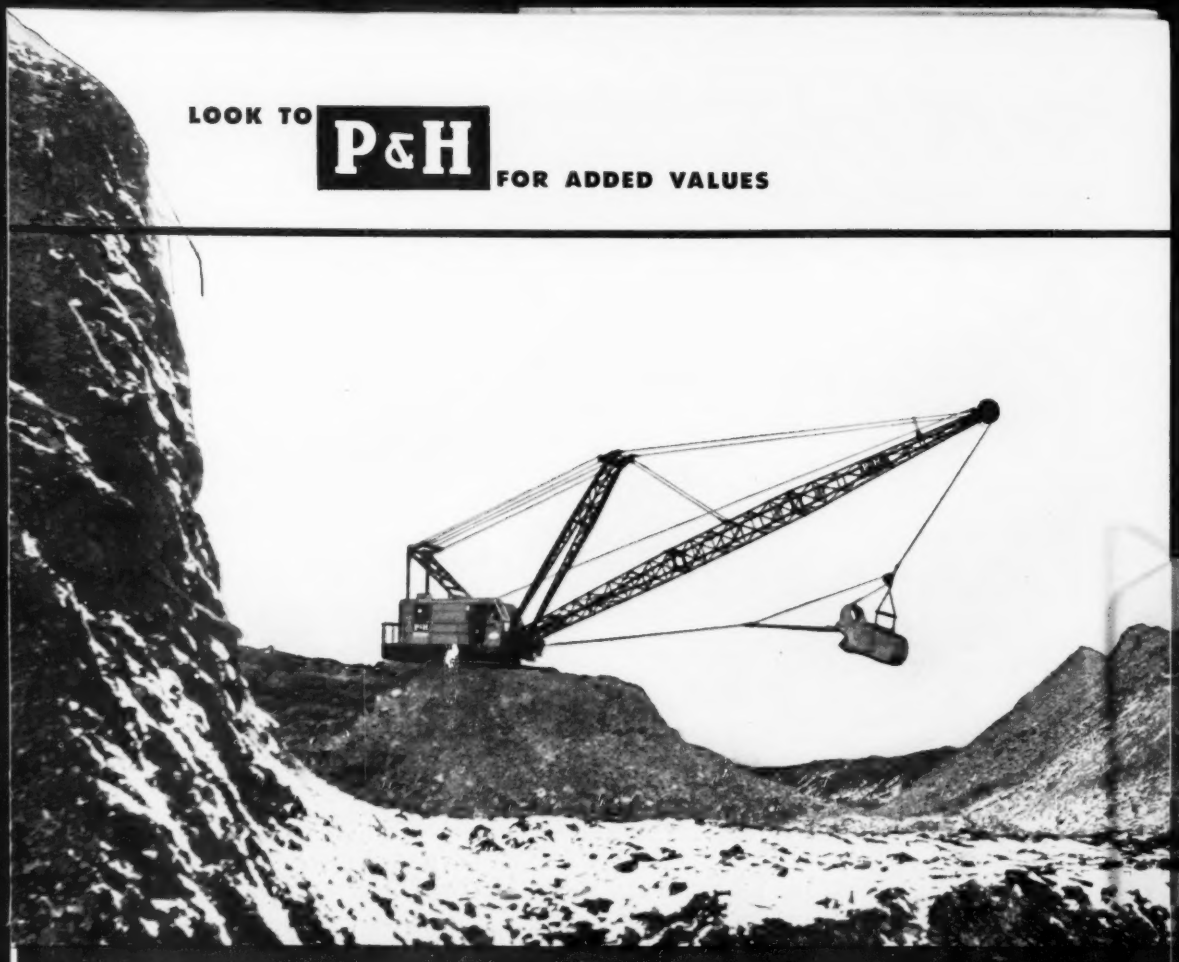

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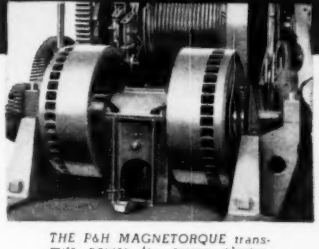

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RHODESIA — The *Shawa Syndicate*, which is operating the *James* claims in the Sabi Valley about 10 miles from the Dorowa apatite deposits, reports the first substantial vermiculite output from a Rhodesian mine. So far, about 200 tons have been won during the course of development being acrried on by one European and 45 Africans. Three shafts have been sunk to a depth of 80′ and solid vermiculite discovered for the entire distance. Several offers for the whole output have been received from American and European interests, but these cannot be considered until the 50 mile road to the railhead at Salisbury is surfaced and transport charges reduced. Meanwhile, local demand is absorbing all the mine can produce, and a pioneer exfoliation plant has been established at Msasa near Salisbury to satisfy the demand from the refrigerating and building industries for exfoliated vermiculite.

FRENCH NORTH AFRICA—Iron ore shipments to the three Western Zones of Germany have been started in accordance with the agreement recently concluded between France and the Trizone. Terms of the agreement state that 35,000 tons of iron ore, valued at $220 thousand, are to be delivered before June 30th.

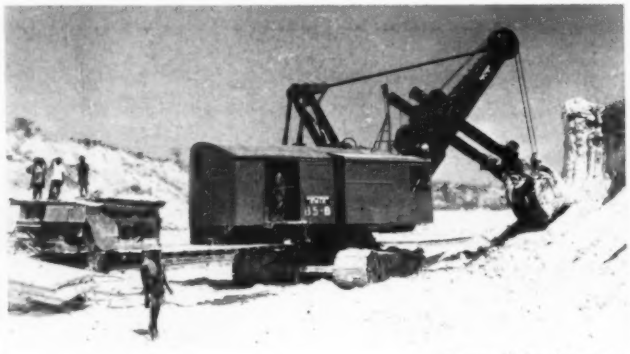
SOUTH AFRICA—The dwindling number of native laborers for the Rand's gold mining operations in recent years is well illustrated by figures of *Rand Leases Gold Mining Company, Ltd.* With a peak of 12,837 in 1942, native labor strength stood at 10,297 in 1946, fell to 9,435 in 1947 and was down to 8,888 in 1948. As a result, the reduction plant is operating below capacity, and the rate of development is insufficient to maintain ore reserves. Latest available figures gave an annual production of 2,357,000 tons milled, yielding 392,408 oz. fine, and the total footage of shaft sinking and development was 87,781′. J. F. Reid is manager.

SOUTHERN RHODESIA—*Bushtick Mines, Ltd.*, reports that its fall in working costs has been more than offset by a steady decrease in the grade of ore milled. The lower costs of operation were incurred by shortages of steel, cement and timber, and by increased drawing on accumulations of broken shrinkage ore and the decreased stope-preparation footage cut as a result of poor payability indications in development. Recently milled ore showed a grade of 2.125 dwt. per ton which returned a working profit of 3/ per ton, in spite of the government subsidy of 27/6 per oz. Harry S. Hopkins is Bushtick's chairman.

TRANSVAAL—P. O'B. Frost, manager of the *Messina (Transvaal) Development Company*, reports that ore reserves at the company's property increased from 3,144,500 tons 2.03 percent copper in 1947 to 3,403,580 tons of 2.02 percent last year. This was partly due to the discovery that several known lodes increase considerably in area at depth: The 10-80 block in the Esperanza lode measured 12,760 sq. ft. and assayed 3.0 percent copper, while in the 11.80 stope on a lower level, the same lode had an area 21,310 sq. ft. of 2.0 percent. Despite a bottleneck at the Campbell shaft, where ore was hoisted until recently in cages, the tonnage hoisted from the mine increased by 26,180 tons to a total of 637,650 tons for the year. This resulted in an increase of 2,131 tons monthly to make a total of 53,493 tons handled by the concentrator monthly. Although supplies of European and native labor were satisfactory during the year, considerable attention was given to increasing native labor efficiency, and the following improvements resulted: Rock broken in development per native increased 10 percent; ore broken in stopes per native increased nine percent; ore produced from stopes per native increased 25 percent.

SOUTH AFRICA—Buoyant conditions in the platinum market are evidenced by operations at the *Rustenburg Platinum Mines*, some 80 miles northwest of Johannesburg, where work is under way to double the capacity of the concentrator. The new concentrator sections already have been completed, and the smelting furnaces will now be dismantled and modified to enable a greater production of matte. Electric power shortages, however, are expected to delay full-capacity production until the Electricity Supply Commission gets its line to the property. Production is in the form of metallics and matte which are shipped to England for treatment.

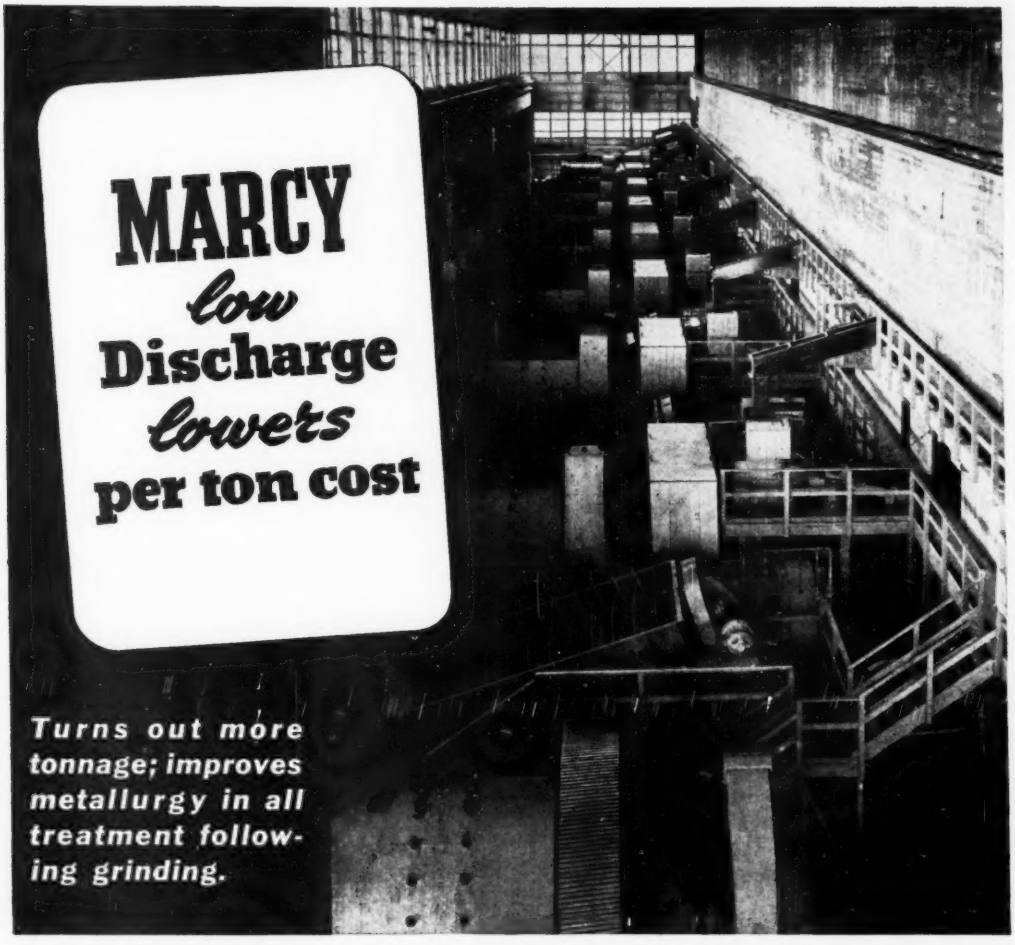
SOUTH AFRICA—Of more than local importance is the news that *St. Helena Gold Mines, Ltd.* has encountered its first payable stretch of basal reef in the Orange Free State's new Odendaalsrus gold field. St. Helena began development work last September from its No. 3 incline in the northwest part of the property where the reefs are nearer the surface, but from the 2,879′ of development done during the last quarter of the year, the 375′ on reef gave no payable values. Values from the new discovery averaged 47.4 dwts. gold per ton over a width of 10″ for 90′ of the 140′ sampled. Meanwhile, the No. 4 vertical shaft, about a mile southeast of the No. 3 incline, has reached a depth of approximately 1,350′.



Courtesy of Photo Congopresse

BELGIAN CONGO TIN OPERATION

The above photo shows one phase of the tin mining operations now being carried on by the Brussels firm, Compagnie Geologique at Miniere des Ingenieurs et des Industriels Belges in Katanga Province, Belgian Congo. The 3¼ cu. yd. bucket scoops up the material, dumping it in the hopper which advances with the shovel. A conveyor transports the ore to the plant situated at Manono, the company's principal mining center. The plant has an annual capacity of 7,000 tons, present production being approximately half that capacity.



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TRANSVAAL—The drive from the *Blyvooruitzicht* mine, which has been extended in to the *West Driefontein* property, has shown exceptionally high values. Of 366′ driven, 110′ on reef proved 100 per cent payable, averaging 129.9 dwts. over 10.8″.

WEST AFRICA—The *Mines Development Syndicate* has now driven a distance of 915′, with crosscuts at intervals of 50′, on the 69′ level in the Nyeba section of the Nigerian lead-zinc areas, disclosing an average width of 18.2′ with a lead value of 14.5 percent. The total continuous wall of payable ore exposed at this level has been brought up to 1,100′ by additional drives north and south. Although only a small amount of work has been done at this property, engineers believe that the lead content would be in the region of 20,000 tons of metal for each 100′ of depth.

TURKEY—Ahmet Selcuk, mining engineer and a former graduate of the University of Pittsburgh, and Bilgin brothers have formed a new mining company, *Bilgin Maden Company, Ltd.*, of Iskenderum. The new firm is reported to have mining claims in seven provinces in Central and Southeastern Turkey. These consist of various chromite, barite and manganese deposits, either adjacent to a railroad or near the Mediterranean coast. At present, the company is producing about 1,000 tons of chromite monthly.

MALAYA—G. W. Simms, chairman of *Ayer Hitam Tin Dredging, Ltd.*, reports encouraging results at the resumed operations of the *Harrietville (Tronoh), Ltd.*, dredge, although operations are not at full capacity. Operations have been restricted to re-dredging ground once worked by the Japanese, with the exception of a small virgin area. As the Japanese did not dredge to the maximum depth, operations to date have been profitable.

CHINA—The mines of Shihchuyuan and Chiashan, part of the Chingchuantang concession in South Hunan province and former arsenic producers, are now being mined principally for pyrite. Several companies are working at present, with a daily output of about six tons of ore.

RUSSIA—According to latest available figures, Russia exported 125,309 tons of manganese to the United States in nine months of 1948 as compared with 221,062 tons in a like period of 1947.

BURMA—George P. Joseph, chairman of *Mawchi Mines, Ltd.*, reports that the firm's property is still inactive due to an embargo on the delivery of explosives to the mine. No information has been received by the company as to when the embargo might be lifted, and it appears likely that the mine will continue on an inactive status until the political situation becomes more settled.

TURKEY—A trade agreement between Turkey and the three Western zones of Germany has been signed, whereby Turkey will export $75 million worth of raw materials to Germany, including ores and industrial metals.

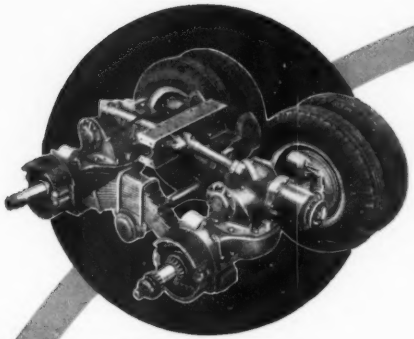
RUSSIA — According to a recent announcement by the U.S.S.R. Central Office of Statistics, the entire mining industry exceeded the 1948 target by 1 percent. Pig iron was said to have soared 22 percent over 1947 production figures; steel was up 28 percent; copper, 20 percent; zinc, 36 percent; and lead, 2 percent. Based on the production figures published in 1940 and on the goals of the five-year plan, the 1948 production estimates are as follows: Pig iron, 15,000,000 tons; steel, 18,500,000 tons; copper, 180,000 tons; lead, 160,000 tons; zinc, 140,000 tons; and pig aluminum, 100,000 tons.

INDIA—The occurrence of phosphate nodules in the Tiruchirapalli district of Madras was revealed recently by a report of the Geological Survey of India. Reserves to a depth of 50′ have been estimated at 2,000,000 tons in an area between 11 and 12 sq. mi.; however, the phosphatic content of the nodules has not been made known as yet.

BURMA—The government is planning an expansion of the mineral industries in Burma which, aside from petroleum, include gold, silver, lead, tungsten, tin, copper, nickel, antimony, iron and precious stones. To this end, the government has appointed Behre Dolbear & Company of New York City as general consultants and technical advisers on minerals.

SIAM—An announcement by the director general of the Mines Department has revealed that a survey of Siamese mineral resources covering the whole country will begin shortly. Although tin is the only mineral being widely exploited at present, the director general expressed the belief that there are substantial deposits of other minerals available for development. Limited-scale antimony mining operations are being carried on in the several provinces, but large iron ore deposits have been found in the Lopburi district which will be developed by the Thai Cement Company. Government geologists also have reported deposits of gold and lead in the Kanchanaburi district south of Bangkok.

JAPAN—Sensational articles of a coming gold rush have been appearing in Japanese papers, following encouraging investigation results at the *Kamui* gold placer mine in Oki-mura, Hiroo-gun, Hokkaido. By request of S. Harazono, owner of the 40,000 acre



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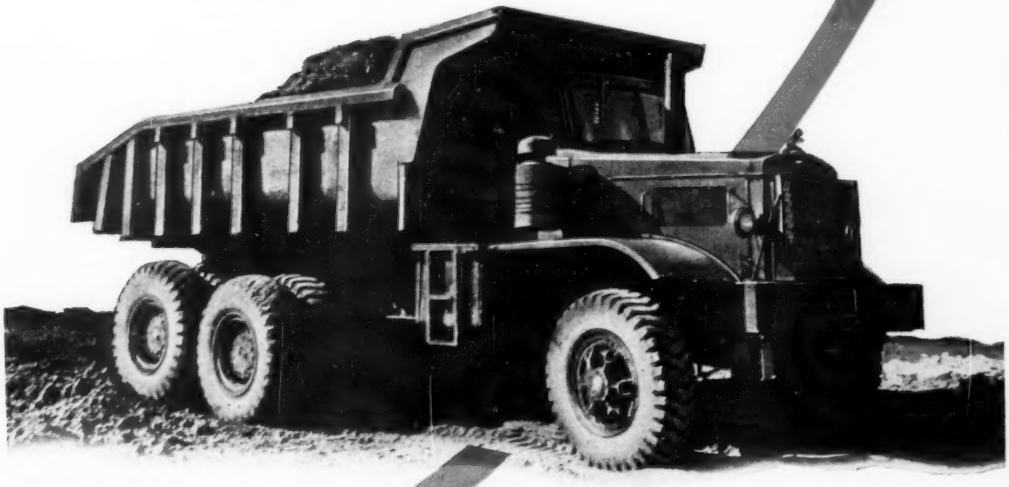

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property, the Sapporo District Commerce and Industry Bureau sent investigators in October, 1948, and January this year who affirmed the mine's possibilities. According to Mainichi, one of Japan's leading newspapers, bureau chief Sato compared Kamui with the Takkiri Valley in Formosa which had been the most promising mine of Japan. Encouraged by these findings, owner Harazono is planning development of the property at a cost of 5,000,000 yen (about $18,500) and has asked for a government loan; however, further large-scale investigations are planned by the government in May before a load is granted by the Industry Reconversion Bank.

TURKEY—The Minister of Economy recently disclosed that $14 million of the $30 million allocated Turkey under ERP will be spent to expand the mining industry. Of this amount, $2 million will go for new equipment and installations at the *Divrigi* iron mines in order to increase production to 500,000 tons annually; $12 million will be used in stepping up production of the lignite mines of Western Turkey, mechanization and electrification of the Zonguldak bituminous coal mines, installation of new coal washeries at these mines and construction of a new harbor at Zonguldak.

JAPAN—Shipments of 100,000 tons of iron ore from the United States to Japan are nearing completion, and it is understood that the Supreme Council of Allied Powers has now negotiated for additional ore for Japan's steel mills. Under two contracts for 50,000 tons each, these shipments have been going forward from Long Beach, California, since last July. The ore has been obtained from the Utah Construction Company which has leases in the Cedar City district of Utah. C. T. Takahashi & Company, Seattle and Los Angeles import-export firm, was expected to start additional shipments in February, under a 200,000 ton contract from SCAP, and General Steel Corporation of Los Angeles is also reported to have received a contract for an undisclosed tonnage.

TURKEY — Manganese ore has been added to the list of items which may be exported for sterling to countries with which Turkey has no trade agreements. The Ministry of Commerce has also announced that the ore may be exported on a barter basis for goods included on the general list of imports.

CHINA — Lead-zinc deposits at Kuangshanchang in Eastern Hunan province, worked since the late Ming Dynasty, are now averaging 20 to 30 tons of lead and a few tons of zinc monthly. The ore, which averages 17 percent lead, is smelted in a native furnace.

TURKEY — Chromite production for 1948 from the *Guleman* mine reached 130,000 tons of high-grade metallurgical ore in December.

EUROPE

SWEDEN — According to the authoritative Stockholm newspaper, Dagens Nyheter, Sweden is boosting her uranium production from nine to 35 tons annually. Although output of the government-controlled mines and oil shale desposits is an official secret, the newspaper disclosed that the uranium would be extracted from the *Kvantorp* oil shales.

ENGLAND—At the *South Crofty* mine near Camborne, work is getting under way to recondition the old Palmer shaft, idle for some years, to aid ventilation. Ventilation in the western section will also be improved by resuming work on a west drive to ultimately connect with the Roskear section of the famous old *Dolcoath* property which is now held by South Crofty. Clarence V. Paull is managing director.

GERMANY—Having rehabilitated the war damaged *Hartenrod* mine at Herborn, the *Rhine River and Barite Works* has resumed barite production at the rate of 50 tons monthly. Before the war, this mine yielded approximately 2,000 tons each month which found a market in the chemical, paint and paper industries.

CZECHOSLOVAKIA — It is reported that Czechoslovakia has offered up to 26 cents a lb. f.a.s. for copper in substantial tonnages. This price is said to have been given to attract Canada and the United States who have little desire to sell at the present price of 23½ cents a lb.

ITALY—According to the Communist newspaper Unita, two types of ore containing uranium have been found near Cuneo in the Piedmont area north of Italy. Discovery of uranium in the Po Valley was first reported in June, 1947.

GERMANY—The *Ilsenburg Copperworks* in the Eastern Zone has been partially converted from the production of non-ferrous metals to the production of steel sheet metals. According to present production plans, Ilsenburg should produce

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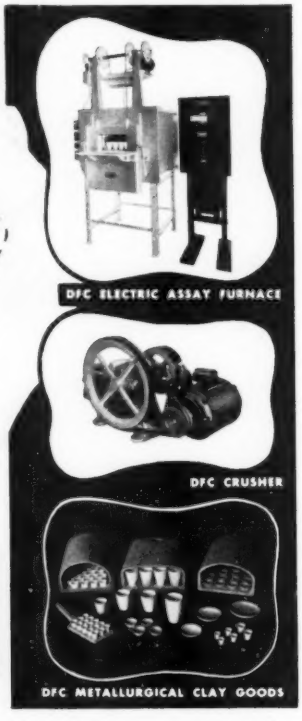

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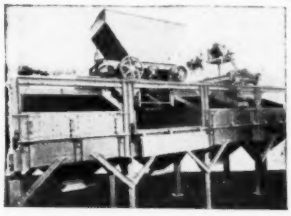

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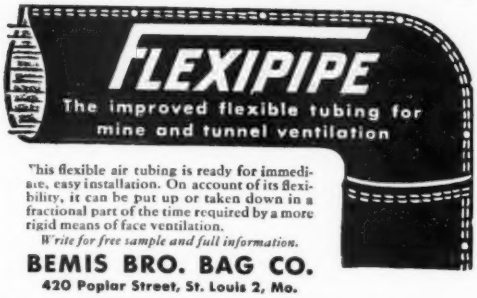

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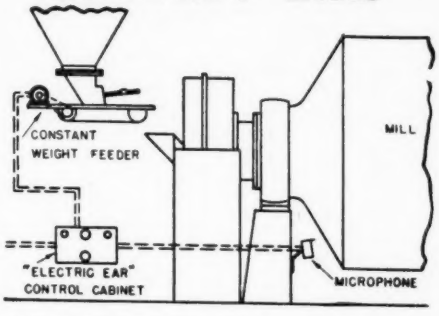

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13 ISSUES

about 8,000 tons of steel sheet metals annually and 2,400 to 3,000 tons of copper sheet metals. A production of 830 tons of copper alloy ores is scheduled for this year and 1,390 tons for 1950.

FRANCE—*Sollac*, a new company formed by eight French steel concerns, is making arrangements to buy a $50 million steel rolling mill in the United States with ECA funds. To be erected at Hayange and Ebange, the mill will include a blooming mill, a ten-stand hot strip mill, a five-stand cold mill and a three-stand cold grip mill. It is expected that Westinghouse will supply $15 million worth of electrical equipment for the mill.

GERMANY—A French report has disclosed that the aluminum reduction plant at Rheinfelden in Southwestern Germany (French occupied zone) has been authorized to produce 25,000 metric tons of aluminum annually. Production activities already are under way to meet this quota which compares with a 30,000 ton pre-war output.

BELGIUM — Zinc ingot production has been increased by *Societe Anonyme Metallurgique de Prayon* which recently started up its 14th and 15th furnaces. Rebuilding of additional furnaces is scheduled for a later date.

GERMANY—New pyrite deposits have been discovered near Elbingerode in the Hartz Mountains in the Soviet zone, according to the Russian-licensed German News Agency, ADN. Pyrite mines now being operated in the district are said to have only a two-year life expectancy, so the newly found deposits will be opened immediately. They are located at a depth of about 750'.

ROMANIA — The ministers of mines and industry are going ahead with plans for the construction of a large aluminum works which will utilize Romania's substantial bauxite deposits in the Transsylvanien area in the vicinity of Kalota and Baratka. The bauxite is a diaspore type and contains 56 to 68 percent Al203 with 1 to 4 percent SiO2. In the past, Romania has imported her pig-aluminum requirements.

YUGOSLAVIA—Marshal Tito, in a recent appropriations debate of the National Council of Yugoslavia, announced that 1948 was the worst year of the republic. As Yugoslavia could not receive equipment for newly developed mines, as well as for factories, aims fell short of the production targets. The government is now saddled with the important task of raising metal production by opening new mines in the Bosnian and Serbian areas, further improving production methods and raising output per man which is far below the figures of other countries.

ITALY — At the *Montevecchio* mines, which produce the greater part of Italy's base metals, operations are proceeding on the 14th and 16th levels at a depth of about 2,000'. The total surface area of this concession is 5,000 acres in which there are about 70 miles of workings. Some 3,000 workers, 2,000 of whom are miners, are employed in the operations. Production last year was increased to 500,000 tons of raw ore with 3.4 percent lead and 4.7 percent zinc from which was obtained 25,000 tons of galena with 64 percent lead and 1 lb. silver per ton and 33,000 tons of blende with 60 percent zinc.

BULGARIA — Mining operations are to be expanded in the Rhodope Mountains following the recent discovery of lead-zinc deposits in the vicinity of the Madan mine. Successful results of exploration work at other properties in the area also are reported.

CZECHOSLOVAKIA—To celebrate the 30th anniversary of the foundation of the Czech republic, the country's fifth blast furnace was recently placed in operation at Trinec. It is claimed to be the most modern plant of its kind in Central Europe.

AUSTRIA—The *Bleiberg* lead-zinc mines in Carinthy, Austria's sole source of molybdenum, are now achieving a production of about 200 tons of concentrates or 25 tons of molybdenum annually. The 70-ton daily capacity flotation plant, consisting of Humboldt-Krupp flotation cells, produces concentrates of 12 percent molybdenum, 57 percent lead, and 2.0 percent zinc. Reserves are estimated at 70,000 tons.

BULGARIA—In compliance with Prime Minister Dimitrov's request that Bulgaria develop a metallurgical industry within a short time, the government is said to be making plans for the construction of a blast furnace and several copper, lead and zinc smelters.

LATIN AMERICA

PERU — *Cerro de Pasco Copper Corporation*, Peru's largest and most important mining and metallurgical enterprise, has placed its new $4 million electrolytic copper refinery in operation in the vicinity of the smelting center of La Oroya. At present, production is limited to half the actual capacity or 100 tons of refined copper daily, with 160 men employed; however, it is expected that when full capacity is reached, the plant will employ 250. The first refinery to be built in Peru, it was over three years in construction, with an average daily crew of 700. U. S. equipment is employed throughout.

BRITISH GUIANA—F. J. Roberts, president of *Barima Gold Mining Company*, reports that sufficient work has been done at the company's properties to justify installation of the first dredge. Drilling has proved 6,681,500 cu. yds. averaging 43c a yd., or a total value of $2,872,111. Workings costs are estimated at 13.25c per cu. yd. Directors are now studying estimates and considering means of arranging finances for the proposed installation.

BRAZIL—Field work to determine the reserve and quality of apatite ore at Araxa was recently completed by the Institute of Industrial Technology of Mines Gerais. Twenty-two holes were drilled to depths from 150 to almost 400'. Chemical analyses of the samples are now being made by the institute.

VENEZUELA—Construction of an aluminum reduction plant, which will utilize bauxite reserves and cheap natural gas fuel, is being considered by Venezuelan authorities.

BRAZIL—A special commission, delegated to make a mineral survey of San Francisco Valley, Bahia, recently disclosed new occurrences of scheelite. If the deposits prove extensive enough for commercial exploitation, Brazil will have a new source from which to increase her tungsten production. Brazil's scheelite mines now in operation are in the northeastern region.

PERU—A 30-ton capacity pilot plant has been placed in operation by the newly formed *Sociedad Minera Malpaso*, Gustavo Stumpf, owner and operator. The concentrator, which will operate on copper, lead and silver bearing ores, has been equipped by Peruvian manufacturing firms.

BRITISH GUIANA — Large-scale production appears to be in the offing for *Cuyuni Goldfields* following completion of successful financial arrangements and proving of its orebodies at depth. Recent reports indicate that commercial ore has been established at a 700' depth on the dip of the vein. Conditions at still greater depth will be ascertained by drilling in the near future. Drifting and drilling have now proven the 401 ore shoot to have a length of from 120 to 150' on the 2nd, 3rd and 4th levels, and the company estimates that approximately $2 million in ore has been added to the reserves.

BRAZIL—The American members of the Abbink Mission (U. S.-Brazil Commission for Economic Studies) are now at Belo Horizonte in Minas Gerais to study the potential hydroelectric resources and conditions for intensive operation of the state's mineral resources. Other states visited by the commission include: Rio Grande do Sul, Parana, Santa Ca-

tarina and Sao Paulo. Their next visit will be to Pernambuco.

VENEZUELA — *Guayana Mines, Ltd.*, operating in the Roscio district, State of Bolivar, is now showing an operating profit, after having suffered a net loss of nearly $460 thousand in the fiscal year ending August 31, 1948. The mill rate is gradually being stepped up and is expected to reach a 400-ton daily capacity by March or April. A further increase to 600 tons is anticipated by the end of August which will reduce operating costs to approximately $12 a ton. The grade will also be reduced when the higher mill rate goes into effect, but an average of .45 to .50 oz. gold per ton should be maintained.

ONTARIO—March production is now anticipated by directors of *McWilliams-Beardmore Mines, Ltd.*, who report good progress in mill construction at their *Silver Mountain* property, 35 miles southwest of Fort William. The unit was originally scheduled at a 100-ton daily plant, but it is now believed that production will be somewhere between 150 and 200 tons.

BRITISH COLUMBIA—Although underground development work at the *Paradise* mine has been discontinued during the winter months, construction work is proceeding under the direction of Jack Crowhurst. Spring plans call for the erection of a 50-ton mill and further work on the road from the mine to Jack Pine.

NORTHWEST TERRITORIES—Moderate success is reported by *The Consolidated Mining and Smelting Company of Canada, Ltd.*, in the first phase of its preliminary program on the 500 sq. mi. Pine Point Concession on the south shore of Great Slave Lake. To date, 32 holes, totaling over 6,000′ of drilling, have been completed on the *Northern Lead-Zinc, Ltd.*, holdings, indicating over 500,000 tons of ore that grades about 7 percent lead and 9 percent zinc. If sufficient tonnages are indicated by this program, the company plans detailed exploration and development, followed by the subsequent establishment of a smelter and refinery in the district.

SOUTH DAKOTA—The *Homestake Mining Company*, the United States' largest gold producer, showed a production slump of over $1,000,000 last year as compared with 1947; gold and silver output in 1948 was $12,658,138 and $13,796,720 in the preceding year. In 1942, before the mine was shut down by the war, production was valued at $17,068,438. Value of ore per ton mined also declined, from an average of $16.25 in 1947 to $14.10 in 1948.

ONTARIO—*Dulama Gold Mines, Ltd.*, is reported to be negotiating for a 200-ton mill to handle the ore from its property in the Missinaibi area of the Sudsbury district. First sampling results from the 150′ crosscut gave an average grade of $9.80 for a crosscut width of 47.1′. Other samples taken along a length of 35.6′ in the wall of the crosscut gave an average of $12.30 per ton.

ALASKA—According to Chris Poulson, president of the *Snowbird Mining Company* at Anchorage, plans are progressing for the installation of a 50 to 75-ton capacity ball mill to be in production by October. Since the resumption of activities in June, 1945, about $300 thousand has been spent in exploration and development work. Fourteen men were employed at the property during the past season.

QUEBEC—*New Thurbois Mines, Ltd.*, which took over *Thurbois Mines, Ltd.*, gold property in Destor township, Northwest Quebec, is making preparations for a resumption of mining operations early in 1949. Plans call for deepening the shaft and establishing two more levels. When previous work was suspended, the most important ore indicated by diamond drilling, the "F" south zone, had not been explored or developed.

IDAHO—Sinking of its main three-compartment shaft from the 1,400 to 2,000′ level has been started by the *Lucky Friday Silver-Lead Mining Company* in the Mullan district of Idaho. Stations are planned at 200′ intervals for future crosscutting purposes, but the main objective is the 2,000 level where better ore values are expected. Meanwhile, production from the upper workings is being continued at the rate of about 50 tons daily. Shipments from the 6,000-ton Lucky Friday stockpile to the Golconda custom mill have been suspended temporarily due to subzero temperatures which have frozen the mill feed.

ONTARIO—A new company, *Matarrow Lead Mines, Ltd.*, has been formed to develop a lead-zinc property in Yarrow township, Matachewan district, on which initial work has returned favorable results. Active exploration was started late in November, with two diamond drills being used to further explore the ore

APATITE MINING IN BRAZIL

In the Jacupiranga region of Sao Paulo, Brazil, exploratory work is being intensified by Serrana S. A. de Mineracao with a view toward increased apatite production. The company, which also controls apatite deposits at Ipanema, has 250 hectares of mining claims in Jacupiranga, 45 of which show a considerable number of rich lenses. To date, exploration has disclosed some 8,568,000 tons of ore in this area. The apatite occurs in small euhedral hexagonal prisms up to 1 inch in size and are recognized by workmen as "rice grains." Annual output of untreated ore has been 25,000 tons, producing from 10,000 to 12,000 tons of concentrates. With stepped-up operations, this figure is expected to reach 24,000 tons of concentrates annually in the near future, and 60,000 tons within three years. The manufacture of superphosphate is being carried out in the city of Sao Paulo, where Serrana maintains appropriate plants. Equipment for a new plant is now on order in the United States for installation at Santos. The above photo shows a pilot plant in Jacupiranga for testing and beneficiating the ore.

zone indicated by earlier drilling. E. K. Fockler, consulting geologist, reported the average grade of six previous holes to be 5.94 percent lead and 2.27 percent zinc over a width of 6.4′ and a length of 800′.

ONTARIO—*Buffalo Ankerite Gold Mines, Ltd.*, with operations in the Porcupine area of northern Ontario, is now developing new rich ore on three widely separated levels. Discovery of the new veins, which occur near the main ore section, resulted from the exploration program initiated last spring. It was originally believed that exploration would locate a repetition of the major lower-grade orebodies; however, the importance of the richer, narrower ore discovered has been reflected by increased production returns.

SASKATCHEWAN — Proposals have been forwarded by *Murmac Lake Athabaska Mines, Ltd.*, for the formation of a new company, *Tazin Mines, Ltd.*, to develop its uranium property in the Lake Athabaska area. Included in the deal is *Conwest Exploration Company*, which has agreed to purchase 200,000 shares of Tazin stock for $30 thousand, to be used for exploration work under the direction of Conwest engineers.

COLORADO—Philip C. Leahy, manager of the Atomic Energy Commission's Grand Junction branch, announced recently that the commission has engaged the U. S. Geological Survey to map the Colorado - Utah uranium-bearing area and carry on several hundred thousand feet of diamond drilling annually.

MEXICO—President Miguel Aleman has announced a plan designed to aid the Mexican mining industry whereby the iron and steel works will be supplied with natural gas to supplant the long used but irregular supplies of coke.

ONTARIO—Operations have been resumed at the old *Cuniptau* mine in the Timagami Lake area by *Trebor Mines, Ltd.*, which acquired the property from *Ontario Nickel Mines* for 1,015,000 shares. A geophysical survey is now being carried out, and dewatering of the old workings, as well as a diamond drill campaign, are expected to start shortly. The property, which is developed by a 240′ shaft and 2,000′ of lateral work, was estimated in 1937 to contain 254,000 tons of ore in place, having a combined nickel-copper content of 1.49 percent after dilution.

ALASKA—Forty men are currently employed at the *Riverside* mine near Hyder, where a good production of tungsten and lead ore is reported for the past year. The ore is concentrated and shipped to the United States for further treatment. J. W. Stewart is in charge of operations.

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OCEANIA

NEW CALEDONIA—Increased nickel production is reported to rest entirely upon Marshall Plan aid to relieve the coal situation, and it was hoped that twice the amount of coal received in 1948 would be received in the first quarter of 1949. Nickel production for 1948 has been provisionally estimated at 2,500 tons, as compared with 1,600 tons in 1947. Of this amount, about 1,700 tons were produced at the Yate works and about 800 at Doniambo. During 1948, a 20 percent reduction in production costs was also achieved as compared with the preceding year.

AUSTRALIA—In accordance with

the Commonwealth Government's arrangements with lead and zinc producers for an adequate home supply, the Prime Minister and the States' Prices Ministers have agreed to advance the Australian prices of these metals. Lead will be raised from £22 to £35 per ton and zinc from £22 per ton to £40 per ton. The price of tin is to remain at £620, as established last June.

NEW ZEALAND—A special testing plant has been established by the New Zealand government at Onekaka for experimental smelting of iron sands on the coast of North Island. Operating the plant are technicians brought from Norway and England. Previous attempts to process the sands have failed because of the difficulty of separating titanium from the iron.

AUSTRALIA—Messrs. Connors and Dixon report a return of 12 oz. gold from 16 tons of ore taken from their *Condix* mine in the Cooktown district of Queensland. They also report that their No. 2 shaft has been sunk 50' on the north end of the reef.

WESTERN AUSTRALIA — *New Coolgardie Gold Mines, N. L.*, has purchased the power and treatment plants of *Phoenix Gold Mines, N. L.* for £20,000, together with stores valued at £5,000, and expects to start milling at an initial rate of 7,500 tons weekly before June. Prospecting on the *Malvern Star* and *Barbara* leases at Hampton and on the *Burbanks* lease has been suspended so that the *Surprise* vein can be developed for stoping. The company reports that the main drive on the 300' level has intersected the Surprise vein, showing values assaying 127 dwt. over 60". At Burbanks, before exploration was temporarily suspended, four underground diamond drills disclosed: 5.4 dwt. over 81"; 45.6 dwt. over 15", 6.6 dwt. over 153", and 6.4 dwt. over 16".

NEW SOUTH WALES—A lead bonus, paid to employees of *Broken Hill* mines as a mucilage in cementing good employee-employer relations, has been causing heartburn among those in receipt of ordinary wages. Last December, the bonus reached a record figure of £11.17.6, based on the average realized price of lead (£110.3.10) for October. In comparison, the £3 bonus paid by *Lake George Mines, Ltd.*, at Captains Flat seemed lean, resulting in the walkout of 400 miners. At latest report, the Lake George management was contending that the low-grade ore would not permit a higher bonus, while the miners contended the company's figures proved they would. If no settlement is reached, Captains Flat, which boasts a population of 1,750, may soon become a ghost town.

SOUTH AUSTRALIA—An Adelaide company, *Tantalite, Ltd.*, headed by Dr. Buller Murphy of Melbourne, is seeking £1,088,865 damages from the Commonwealth of Australia. The plaintiffs claim that 626 tons of rosterite, containing Caesium, was unlawfully ceased from a mineral lease at Wodgina West, Western Australia, between January 1943 and January 1949. As an alternative suit the company is claiming a like amount for alleged breach of contract. Named as defendants are: The Commonwealth of Australia; John Albert Beasley, formerly minister of supply and development and now Australian high commissioner in London; and James Malcom Newman, who was controller of mineral products.

TASMANIA—Australia's first titanium pigment factory was recently opened by *Australian Titan Products*, subsidiary of *British Titan Products*, at Heybridge near Burnie. H. Tasker, chairman of the board of the parent company, said initial output will be about 1,800 tons annually which will be stepped up to 2,500 tons and ultimately to 3,600 tons.

WESTERN AUSTRALIA — The *Copperhead Syndicate* has received notice that *Great Western Consolidated* has exercised its option to purchase the *Bullfinch* mine for £21,000. It is understood that the new operators will erect a mill of substantial capacity at the mine.

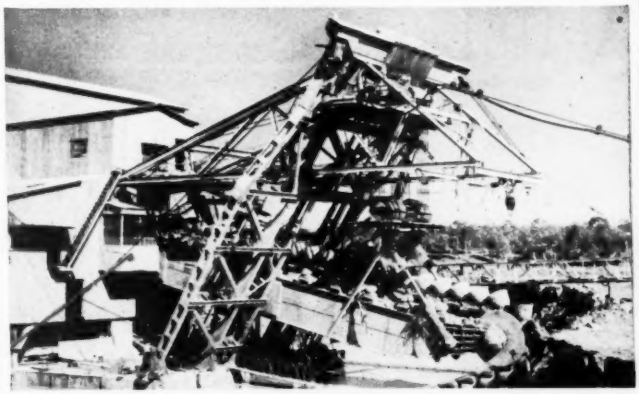
TASMANIA—A license has been issued to *Montana Silver-Lead, N. L.*, to prospect about 12,000 acres near Zeehan, adjoining the areas held by North Broken Hill, Ltd., and Broken Hill South, Ltd.

NORTHERN TERRITORY—Newly organized is *Northern Star (Tennant Creek) Gold Mines, N. L.*, which will operate the *Northern Star* mines at Tennant Creek. Nominal capital is £125,000, and A. P. S. Sangster, J. S. Higgins, R. and C. H. Schmidt are directors.

TASMANIA—*Aberfoyle Tin, N. L.*, reports that in a recent five week period 1,672 tons of ore were treated for 26 tons of concentrates, 4½ tons tin slimes and six tons of wolfram concentrates, valued at £15,265.

NORTHERN TERRITORY—*Australian Development, Ltd.*, of Tenant Creek reports that its north crosscut has been driven 100', with values of 15 dwt. showing from 89' to 100'. The crosscut was projected to connect with the drive 115' east of the No. 2 shaft. P. Braham is the company's new manager.

NORTHERN TERRITORY—Dr. J. A. Dunn, formerly of the Indian Geological Survey and now mineral economist with the Commonwealth Bureau of Mineral Resources, has completed a survey of the Harts Range mica field and reports the deposits to be as large and of as good quality as those in India. Government officials are cooperating with W. Petters, prominent British engineering expert, in determining the mica potentialities of the field.



TIN DREDGING IN QUEENSLAND

Although alluvial tin is found in payable quantities in various parts of Queensland, Australia, the principal producing area is at Mt. Garnet, just west of the Atherton Tableland in North Queensland. Latest reports from this tin mining region is that the Mt. Garnet dredge, shown above, is now entering ground showing good bore hole samples. Production is maintained at approximately 1,000 tons annually.

WHAT'S THE PITCH...
OF YOUR CLASSIFIER SPIRAL?

This is a partial report of new laboratory tests to determine the effect of pitch on raking capacity of a classifier spiral. Here, briefly, is what it means to your classifier operation.

When A tons were produced by the 12° spiral 0.86 A tons were produced by the 17½° spiral. When B tons (test No. 2) were produced by the 12° spiral 0.57 B tons were produced by the 17½° spiral.

The pitch angle of your AKINS spiral is 12° with the pitch equal to half the diameter. Increasing this pitch by, say 50%, increases the pitch angle to 17½°. Our tests using pitch angles of 12° and 17½° were run under identical conditions in all other respects. The figures give the story graphically. Test No. 2 was run with material having a high angle of repose. Test No. 1 was run with material having a low angle of repose.

For most applications under normal field conditions, the 12° Akins spiral continues to prove better. As used in the AKINS Classifier, it produces equal or greater tonnage, with lower moisture content in the end product, on less power consumption and with less wear on all parts (based on slippage and abrasion factors).

Be sure you get the raking efficiency your flowsheet demands. Our engineers are qualified to consult on your problem—a service without cost or obligation to you.

AKINS 12° spiral delivered; 12° 178%
17½° spiral delivered; 17½° 100%
AKINS 12° spiral delivered; 12° 107%
17½° spiral delivered; 17½° 100%
Moisture content of wet rake product 12° 16.9%
17½° 24.4%

Test No. 1 (first set of bar graphs above): Tank slope, 3½ in.; Spiral RPM, 5.71;

Test No. 2 (last two sets of bar graphs above): Tank slope, 3½ in.; Spiral RPM, 5.71;

COLORADO IRON WORKS COMPANY
DENVER, COLO.

Canadian Locomotive Co., Ltd., Kingston, Ont., Can., Head, Wrightson & Co., Ltd.; Stockton on Tees, Eng.; John Carruthers & Co., (Pty.) Ltd., Sydney, Aus.; Vancouver Iron Works, Ltd., Vancouver, B. C., Can.; Head, Wrightson & Co., S. A., (Pty.) Ltd., Johannesburg; Edw. J. Nell Co., Manila, P. I.

(*Continued from Page 24*)

The *East Eagle Mining Company*, operating in the gold belt of eastern Oregon, acquired considerable equipment during 1948 and is now making preparations for the installation of a mill this spring. At present, the mine is being readied for production, with chutes being placed on the orebodies preparatory to stoping. Development ore, carrying gold as well as copper values, is being stockpiled, as work forges ahead.

Discovery of uranium-bearing ore in the Lake Quinault area of the Olympic Peninsula has been reported by Dave Alexander, Moclips, Washington, who has filed a claim on a 160-acre tract in the Falls Creek area. Samples of the ore have been sent to assay firms in New York and California and to the AEC. Alexander also said the claims have good showings of gold and silver.

The *Sullivan Mining Company* has now completed half of its diamond drilling program on the *McKinnon* group near Metaline Falls, Washington, according to Frank J. Luedke, president of *Metaline & Pine Creek Consolidated Mining Company*, owner of the property. Drilling to date totals 21,364' which includes six holes not on the McKinnon. Heretofore, no progress reports on the program were available at the request of the Sullivan company. Now it is announced that 12 holes have penetrated a zinc-lead mineralized zone with the following thickness: 74', 24', 66', 132', 110', 65', 90', 109', 113', 119', 169', and 147'.

The *Horseshoe Basin Mining & Development Company*, with 22 claims in the Stehekin mining district near Chelan, Washington, reports that erection of a mill at the property will be started this year. It is also planned to begin construction of towers for a $1\frac{1}{4}$ mi. tram to allow year-round operations. Meanwhile, tunneling is to proceed under a 370' outcrop on the main fissure which has been opened at an elevation of 7,200'. The main obstacle to development of this property has been a 900' bluff which defied transportation of heavy mining equipment; this obstacle has now been overcome by installation of an 1,800' highline. Martin A. Morrison is company president, with headquarters in Bremerton.

Extensive spring operations are planned by the *Northport Mining and Development Company* at its *Frisco-Standard* mine near Northport, Washington, according to the newly elected president, Alfred E. Hankins. The property is in a Stevens County area that has attracted considerable attention lately because of exploration work carried out by Goldfield Consolidated, Mines Management (Silver Dollar) and others.

The newly formed *Associated Lead and Zinc Company* announced recently that hereafter it will be the sole distributor in the Pacific Coast areas of all pigments and oxides manufactured by the Eagle Picher Company. Jointly owned by Bunker Hill & Sullivan of Kellogg, Eagle Picher of Cincinnati and Northwest Lead Company of Seattle, the new company has invested in a zinc oxide plant adjoining the Northwest Lead plant on Harbor Island, Seattle. The company will manufacture zinc and lead products separate and distinct from the Northwest Lead plant, with a large supply of the raw materials provided by Bunker Hill. Incorporators include: Stanly A. Easton, Bunker Hill president; J. M. Bowlby, Eagle Picher president; and Roger H. Cutting, Northwest Lead president.

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Oliver's 1949 Stripping Program to Set New High

With peak peacetime demands for iron ore, Oliver Iron Mining Company, a United States Steel subsidiary, has stripping plans for 1949 that call for the removal of 32,000,000 cu. yds. of waste overburden, an all-time high in the company's 56 years of operation.

Prominent in this large-scale program is the Gilbert open-pit mine near Gilbert, Minnesota, where 2,000,000 cu. yds. of surface waste material must be removed preparatory to the 1949 shipping season.

As a result of scheduling its stripping and heavy equipment maintenance during the winter months, most of Oliver's men are now working a full year, in sharp contrast to the prevailing practice in the past.

The new *Mather A* mine of the *Cleveland-Cliffs Iron Company* came within less than 10,000 tons of reaching the million-ton production mark in 1948, placing it in the front rank on Michigan's Marquette Range. Capacity of the Mather has not yet been reached, as equipment is designed for about 1,750,000 tons annually. The new *Mather B* shaft is going down steadily and should reach the 2,000' mark soon on its way to the 3,100' objective. When this mine is opened, tonnage is expected to be doubled. The shafts are a mile and one-third apart, with the A in the corporate limits of Ishpeming, and the B within the city of Negaunee.

Water has been partially removed from the *Champion* iron mine at Beacon, Michigan, and the *North Range Mining Company* is making preparations for sending ore to the surface. Output for 1949 is expected to be about 100,000 tons, to be increased as development work expands.

The second largest shipper on Michigan's Marquette iron range during 1948 was the *Maas* mine of the *Cleveland-Cliffs Iron Company*, with 664,822 tons. The *Negaunee* mine, which for years led the list on this range, has dropped consistently as its reserves became depleted. It is expected that the property will be abandoned in the near future.

A 25-year extension of four leases covering the *Hill Annex* iron mine on Minnesota's Mesabi Range has been granted by the State of Minnesota to the *Inter State Iron Company*, a Jones & Laughlin Steel Corporation subsidiary. Under the extension, the state will receive approximately $750 thousand more in royalties on the known ore in the mine, because of increased payments which run from a few cents to 50 cents per ton. The company has agreed to pay $3,929,090 royalties on about 5,000 tons of merchantable ore and 13,000,000 tons of lean ore materials that are included in the lease extension.

The *Inter-State Iron Company* has completed several months of drilling at the *Wentworth* mine on the eastern Mesabi Range. It has not yet announced how much, if any, tonnage the drilling has added to the nearly 600,000 ton ore reserve estimated for the mine. The drill has been moved to the *Schley* mine at Gilbert which is credited with about 4½ million tons.

Since last November 15, when the conveyor system was discontinued for the winter months at the *South Agnew* mine, Hibbing, Minnesota, stripping material has been loaded in 20-ton trucks from the dragline and the portable hopper. The best 24-hour period with this method so far reported has shown 20,679 cu. yds. being loaded out. In a six-month period, the dragline has moved 3,546,914 cu. yds. of stripping at this *Butler Brothers* operation.

An announcement from the Duluth office of the *Oliver Iron Mining Company* has revealed that the capacity of the Duluth plant of the American Steel & Wire Company (U. S. Steel) will be increased 35 percent this year. Improvements made last year included: a new research laboratory, equipped and placed in use at Duluth by Oliver; a pilot plant, installed at the Trout Lake concentrator at Coleraine, Minnesota; and a new ore washing plant, placed in operation at Mountain Iron, Minnesota, which together added 3,002,000 tons of iron concentrates to the ore produced by Oliver in 1948.

Preparations are being made by the *North Range Mining Company* for an examination of the *Iron River* mine, also known as the *Riverton*, near Iron River, Michigan. If the investigations prove satisfactory, the company intends to reopen the old property. When the water has been lowered sufficiently, shaft timbers will be checked to determine the extent of repairs which will be required. The No. 5 shaft will be the company's first concern. Discovered in 1879, the mine was operated by the Oliver Iron Mining Company and abandoned in 1905 since which time it has been idle.

SOUTH AGNEW STRIPPING PROGRAM

Butler Brothers' South Agnew iron mine, whose management was recently taken over by the M. A. Hanna Company, is carrying on an active winter season stripping program near Hibbing, Minnesota, on the Mesabi Range. Prominent in this program is the company's Bucyrus-Erie 1150-B walking dragline, equipped with a 25 cu. yd. capacity bucket, which has moved 3,546,914 cu. yds. of material in a six months' period. Since last November 15, when the conveyor system was discontinued for the winter months, stripping material has been loaded in 20-ton trucks from the dragline and portable hopper. The best 24-hour period with this method so far reported has shown 20,679 cu. yds. being loaded out. The above photo, taken before the conveyor system was discontinued, shows the dragline unloading its overburden into the mobile screening plant, mounted on 1150-B crawlers and self-leveling base; spoil material traveled via the 1¼-mile conveyor belt to the stacker.

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3,000 yards of overburden moved each eight-hour shift . . . 400,000 yards in the first 12 weeks on the job . . . that's the record of four Cummins-Powered Wooldridge Terra-Cobras being used by the Haley-Young Mining Company at the Elbern Mine near Chisholm, Minn.

Powered with Model HBISD-600 Cummins Diesels, these earth movers each maintain an average of 70 loads every eight hours on the one-mile round trip . . . carrying 11.5 yards of material each trip and working on grades up to 12 per cent. In this high-speed stripping operation, Haley-Young also uses six Euclid Rear Dumps and a Lima 1201 shovel . . . all powered with Cummins Diesels.

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CUMMINS DIESEL SALES OF SPOKANE	South 155 Sherman St., Spokane 5, Washington, Tel. Main 5460
CUMMINS & MORAN	426 W. Madison, Phoenix, Arizona, Tel. 4-4040
CUMMINS DIESEL SALES OF IDAHO, INC.	207 S. Capitol Blvd., Boise, Idaho, Tel. 3783

AS&R Active in Colorado Mine and Mill Operations

The American Smelting & Refining Company, with the Arkansas Valley Smelter, Kokomo Unit, Eclipse operation and Leadville Milling unit in Colorado, has entered the 1949 scene with an active program of major construction improvements and active development work.

At the Arkansas Valley smelter, which employed 275 men last year and reduced 11,000 tons of charge, a slag granulator and an addition to the present Cottrell plant are now under construction.

A new Ingersoll-Rand two-stage air compressor with a 1,100 cu. ft. per minute output is presently being installed at the New Shaft on the Victory property, a Kokomo Unit operation. This new three-compartment vertical shaft was completed and placed in operation last year, facilitating mining and development to the 435' level.

The Robinson mine tunnel, also part of the Kokomo unit, was cleaned out during the past season and is now being extended into East Sheep Mountain. Diamond drilling is under way at this property to obtain additional information about the bedded geological structure.

The old Wilson shaft, Kokomo's third operation, was recently rehabilitated and a concrete shaft collar and new head frame constructed, along with installation of a double drum electric hoist. The Kokomo Unit operations are producing about 10,000 tons monthly, employing 100 workers.

At the Eclipse shaft, east of Leadville, exploration and development work is in progress from the 1,000' level on a two-shift basis. A diamond drill program was conducted during the latter part of the year from surface locations on the property.

The Leadville Milling Unit has been operating on a seven-day basis, principally on ore from the Victory mine.

Five Uranium Plants To Operate in 1949

Speaking at the annual meeting of the Mining Association of the Southwest, Philip C. Leahy, manager of the Atomic Energy Commission's branch at Grand Junction, Colorado, said that five uranium producing plants in Utah and Colorado will be operating at capacity this year.

Contracts for the purchase of uranium output from the two private plants now operating in the Colorado Plateau region have been extended, he said. In addition, negotiations have been under way for contracts covering the operation of a plant at Durango and another at Uravan, Colorado. The mill, owned by the AEC at Monticello, Utah, also is being readied.

According to Leahy, the Commission is now paying $3.50 a pound for uranium in average-grade ore and is accepting low-grade ore for which there has been no previous market.

DEVELOPMENT EARNS MILL INCREASE

In Spruce Gulch, near Deadwood, South Dakota, Belle Eldridge Gold Mines, Inc., has completed enlarging its mill capacity from around 50 tons to 100 tons daily, following the discovery of an 18' vein of gold, silver, lead and zinc ore. Systematic core drilling under the direction of LeRoy T. Leach, company consultant engineer, was responsible for the discovery. Extensive and repeated assays to date have shown between $25 and $30 average values from an area approximately 200' in width and at depths from 250' to 285', over a length of about 2,000'. These are said to be the best results obtained in the 10 to 12 years of this property's development. Plans are now being laid for sinking a shaft to this new ore level. The above recent photo taken at the Belle Eldridge property is a view of the mill, office and assay buildings.

COLORADO

The *Callahan Lead-Zinc Company* and Carl R. Smith of Denver have purchased the bulk of the mining property sold for unpaid 1947 taxes in a recent tax sale. Included in the 25 claims purchased by Callahan in the Tomichi mining district near Whitepine, Colorado, are: the *Black Diamond, Belvidere, Comstock, Jr., Denver City, Last Chance,* and *Morning Star.* Purchases made by Smith include 26 mining claims near Crystal in the *Bear Mountain* group, some 15 claims on Treasury Mountain, and other scattered claims in various county mining districts.

Extensive development with an increased crew is planned at the *Simpson-Alexander* mine at Brown Mountain near Ouray, Colorado. So far, the mine has shipped three carloads of high-grade lead ore, and it is now reported that another high-grade orebody has been opened. Operations are continuing throughout the winter.

Development work this past season at the *Kimberly* mine northwest of Kokomo, Colorado, is reported to have opened mill grade lead-zinc ore from which 1949 production will be drawn. Most of the work has been done from the Breen shaft. In addition, the *Colonel Sellers Leasing Company* has completed a 1,000' crosscut from the Colonel Sellers shaft. Will Young is manager, and Dan Webster is superintendent.

Progress of 10' to 15' a day is reported by the Callahan Construction

(*Continued on Page* 62)

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The Timken union is a single solid piece of steel—nothing to loosen up under the shock of the hammer blows no matter how hard the rock may be.

The Timken bit and the Timken union are made for each other. There is no other way to obtain Timken rock bit performance.

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO - CABLE ADDRESS "TIMROSCO"

(*Continued from Page 60*)

Company which is driving a tunnel under contract to the *Climax Molybdenum Company*, Climax, Colorado. To be completed in 1950, the tunnel is being driven into the orebody, 300' below the Phillipson level, to enable necessary development work on the 300 level. At the latest report, the 1,000' mark had been passed, with only five sets of timbers installed. Four drifters are being used on a jumbo, and cherry picker cars are loaded out in three's. During 1948, Climax mined 2,250,000 tons of ore from which approximately 13,200,000 lbs. of molybdenum was produced. Tungsten is recovered as a by-product.

Operation of the Valentine mill in California Gulch near Leadville, Colorado, will be resumed on a 24-hour basis as soon as weather conditions permit, it was announced recently. Converted into a screening and jigging concentrator last year, the plant has been treating lead-zinc tailings from the *Starr Placer*, worked under a partnership agreement by Dan McEachern and Ellis Webster.

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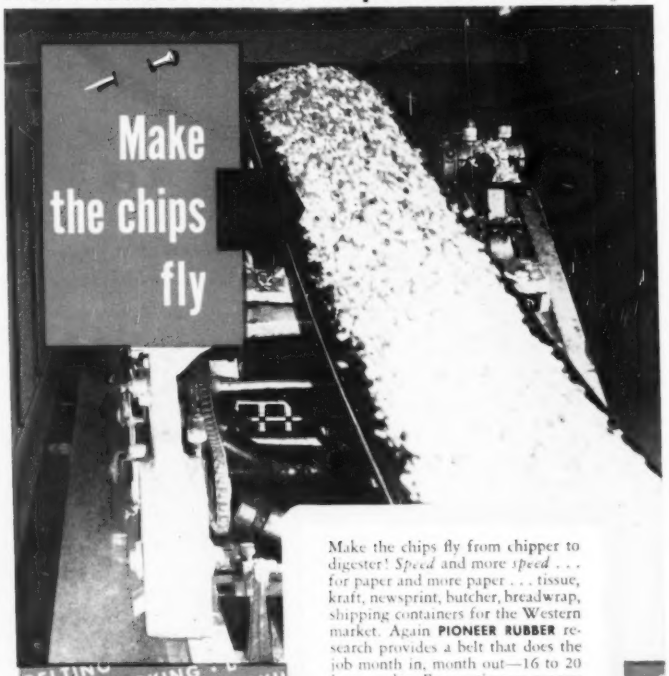

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UTAH

The *American Metal Mining Company* reports that it is continuing development work at its mineral properties in Big Cottonwood Canyon, Utah. At present, work is concentrated on driving southeast on the Silver King vein which is said to be showing an approximate 10' width. Considerable mineralization is being encountered, reports indicate, with almost continuous showings of galena. Objective of this drive, according to President Charles S. Woodward, is to undercut at depth orebodies formerly mined in upper areas of what was known as the Branborg workings. Lessees from the Cardiff mine south of the American Metal holdings have reported a good showing of ore on the lower levels.

The *Cardiff Mining & Milling Company* recently leased the lower part of its mine below the 800 level to Hicks and Milne, who have now dewatered to the 1,200 level. First ore shipments will be taken from the 1,000 level where present work is under way. The company's property is in the Alta district, Big Cottonwood Canyon, Utah.

An initial shipment from the north drift on the 900 level has been made by *Park City Consolidated Mines Company*, Park City, Utah. Grab samples are reported to show high silver values. Present work is being carried on 300' above the water level.

Latest available reports are that *East Utah Mining Company's* tunnel has passed the 4,850' mark, with minor fissured zones cut showing good mineralization. This work near Park City is being done by Newmont Exploration, Ltd.

Accelerated production, exploration and development operations are reported in the American Fork mining district of Utah where the *Howell Mining Company*, *American Fork Consolidated Mines* and *International Smelting and Refining Company* are all active. The major portion of production from this district has come from the *Dutchman* group operated under lease with the *Globe* mine by Howell, and from the American Fork company. The latter firm is now making shipments of high-grade lead-silver ore to the smelter from a vein in the northwest end of the property. Several months ago, diamond drilling was carried out and a geophysical survey conducted, findings of which have encouraged the company to develop these areas. International, meanwhile, is conducting a diamond drill program on the *Mineral Hill* property and has done considerable work in rehabilitating surface buildings. Considerable mining equipment also has been installed.

ANOTHER SECURITYFLEX *Safety First:*

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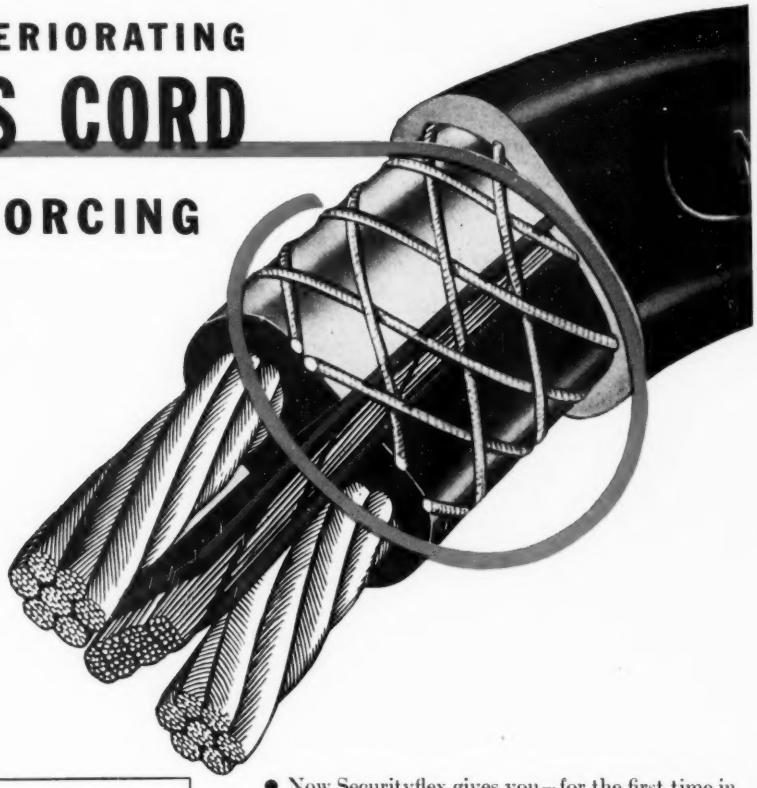

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Basic Refractories Plans Large Nevada Project

Basic Refractories, Inc., one of the United States' largest producers of basic granular refractories, has acquired an extensive deposit of magnesite at Gaabs, Nye County, Nevada, and is now making plans for the new project which is expected to begin by July 1.

The deposit was purchased from the War Assets Administration along with an adjacent ore dressing and calcining plant. The company also has acquired a large rotary kiln from the government-owned plant at Baton Rouge, Louisiana. These purchases are reported to have involved $650 thousand and are expected to increase Basic's production by about 50 percent.

The property purchased and leased in Nevada consists of 45 lode mining claims comprising 800 acres, ten millsite claims totaling 50 acres and 39 placer claims aggregating 4,000 acres. Added to its leased properties, the company now controls 70 lode claims in one of the most extensive known magnesite and brucite deposits in the world.

Designed, built and operated during the late war by a Basic subsidiary for the production of magnesium, the ore dressing plant is near the company's Nevada mine. From 1941 to November 1945, the Gabbs project furnished all the magnesite for the Basic Magnesium plant at Henderson, Nevada, which produced one-fourth of the incendiary magnesium used by the Allies during World War II.

Six Arizona Mining Firms Challenge Tax Commission

The Arizona State Tax Commission has been named defendant in the superior courts of four counties in six separate suits, challenging the state's right to levy sales taxes against mining companies on the wartime subsidy payments of the federal government for copper, lead and zinc production.

The mining companies contend that subsidies paid out by the government during the war to stimulate production of critical metals are not taxable under the state's excise revenue act. They maintain that these subsidies did not represent a part of the metal's sales price but constituted a bonus paid by the government, as distinguished from income. The tax commission levied the assessments against the subsidies in view of opinions by courts of other states which held the payments taxable.

Involved in the suits for sums aggregating nearly $200 thousand are: Mammoth St. Anthony, Ltd.; Miami Copper Company; Castle Dome Mining Company; Sam Knight Mining Lease, Inc.; Phelps Dodge Mining Corporation; and Eagle-Picher Mining and Smelting Company. A number of other mining corporations similarly situated are expected to prefer charges later.

It appears probable that the suits will be carried to the Arizona Supreme Court.

The *Bagdad Copper Corporation*, Bagdad, Arizona, recently received four 30-ton Euclid dump trucks for use in its open-pit mining operations. Stripping has been speeded up following the addition of a new electrically operated 5 yd. shovel; another similar shovel has been purchased and is expected at an early date. Production at Bagdad is averaging 90,000 tons of ore monthly with a company payroll of about 300. E. R. Dickie is general manager.

Ore bins are being constructed and housing facilities erected at the *Arid Zone* group of five claims, operated by the *Austin Mining Company*, Box 3, Chloride, Arizona. Underground, the shaft has been sunk to more than 160', and the management now proposes to drift along the vein. Principal metal values are in lead, silver and gold. Lewis C. Austin is company president and F. Dent, manager. Five men are employed.

The *Calamina* group of 10 claims has been leased by Charles and Fred Gerold, 2720 South Sixth, Tucson, Arizona, who are now employing a small crew in exploration work. At present, a crosscut is being driven on the 90' level of the silver-lead prospect. Antonio Zambonini, Box 211, Marana, is mine owner.

Walter N. Sims, 428 East Eighth Street, Tucson, Arizona, is unwatering the old *Pioneer* mine, 16 miles south of Globe, with a crew of five.

Articles of incorporation have been filed by *Portal Mines Development Corporation*. President of the new corporation is O. R. Heidrich of South Laguna, California. Other officers include W. H. Wilson of Portal, vice president; Daniel V. O'Flahery, secretary; Richard W. Rolands, assistant secretary, and Albert L. Knorr, treasurer.

Production from the *Hillside Mining and Milling Company*, E. R. Dickie, manager, Bagdad, Arizona, is averaging about 1,000 tons monthly. The mine is being operated on a two-shift basis with 45 men employed underground and 11 above. Drifting is proceeding on the 900' and 1,000' levels, raises are being put up from both these levels and some stoping and prospecting is in progress on the 300' level. The company's mill is treating 75 tons of ore daily, about half of which is coming from the Goodwin Mining Company's operations.

The *Goodwin Mining Company*, operating the *Copper King* claim near Bagdad, Arizona, has suspended production activities temporarily while a larger hoist and heavier skip are being installed for increased output. Previously, about 25 tons of ore daily had been mined from the property, which is worked on a two-shift basis with 18 men employed. The shaft is down 308', and stoping operations are now under way on the 100', 200' and 300' levels. In addition, the company is using bulldozer equipment to scrape off the top of the mountain for a new shaft location. At the *Old Dick* group of three claims in the Eureka district, also operated by the Goodwin company, 22 men are working a two-shift basis, mining about 500 tons of ore from drifts and stopes on the 50' level. Ore from both operations is going to the Hillside Mining and Milling Company's plant for treatment. George Green and J. H. Cazier of Bagdad are manager and mine superintendent, respectively.

The *Omega Metals Company*, headed by George F. Reed of Kingman, Arizona, is working two shifts at its *Copper World* claims in the Cedar Valley district, mining about 500 tons of copper-lead-zinc-silver ore monthly. A crew of 26 is employed. The tunnel has been advanced about 800' and a crosscut driven 100' with all workings timbered where necessary. The present orebody was located through diamond drilling, and the management proposes to do additional drilling in an attempt to locate extensions of this deposit. Ore from the Copper World is sent to the new selective flotation plant which the company has erected

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at the old *Boriana* property near Yucca. The company plans to rework the old Boriana dump as well as explore the mine for additional ore. The Omega mill is also being used to treat a small tonnage from the *Tungstenite* property operated by Roy Waughtel of Kingman. George Freeman of Kingman is mill superintendent, and H. V. Starchman, Box 68X, is mine superintendent.

A diamond-drill program is now under way at the *Golden Door* mine, west of Chloride, Arizona, with the object of outlining more accurately the limits of known ore bodies. It is also planned to test the cores obtained to determine whether the ore can be economically treated by the activated charcoal process. W. P. Sellers, Jr., is mine superintendent.

Strip mining at the rate of 300 tons daily is planned by the newly organized *Goldfield Mines Syndicate* which has purchased the old *Goldfield* mine, northeast of Mesa, Arizona, and almost at the western base of Superstition Mountain. Two principals in the new concern are Alfred Strong Lewis and Thomas R. Russell, who report that preliminary work will be the removal of 10,000 yds. overburden and construction of a dam to divert flash floods. Estimates are that the material will average $9 a ton in recoverable gold, with mining costs set at not more than $3 a ton. The ore will be crushed and treated by a coarse cyaniding process. Ample water is said to be available at the property.

It is reported that the *Athletic Mining & Smelting Company*, operating the *Iron Cap* and *Head Center* mines and a mill near Klondyke, Arizona, has now shipped over $1,000,000 of lead-zinc ore since the start of its Arizona operations in February, 1942. The company now has acquired three new properties: the *Grand Central*, the *No. 1*, and the *Arizona*, but at present lack the necessary extra crews for their operation.

A new area of the *Bodie* lead-zinc mine in Yavapai County, Arizona, is now being opened by lessee, W. H. Kirkpatrick of Prescott. Meanwhile, regular shipments are going out to the El Paso smelter. Some of the ore is said to have been of sufficiently high grade to net from $4,000 to $5,000 per ton.

Seven men are employed at the *Indiana* mine, a group of 15 patented claims in the Silver Bell mining district, Pima County, Arizona, and a small production of copper-lead-silver-zinc is reported. New raises have been completed from the 400′ to 300′ level and from the 300′ to 200′ level, and old raises are to be repaired for use from the 200′ to the surface. Meanwhile, drifting has been resumed on the 300′ and 400′ levels. The Indiana is owned and managed by Sidney J. and John J. Macneil. A. Macfarlane is supervisor and assayer.

Wayne Huckaby and sons have installed a 350′ compressor and are now sinking a shaft at the old *Calendonia* mine, two miles west of Kelsey in El Dorado County, California. Idle for nearly 50 years, the mine is said to have an auriferous pyrite orebody which the operators will develop.

The *Lee* drift mine, three miles east of Rocklin in Placer County, California, was recently reopened by H. E. Martin of Sacramento, who is now running an adit for a new entrance way. The mine, which was worked a generation ago through a vertical shaft over 100′ in depth, contains two horizontal gravel horizons about 50′ apart.

It is reported that *Empire Star Mines Company, Ltd.*, of Grass Valley, California, recorded in 1948 its first profitable year of operation since 1942. In 1947, operations resulted in a loss exceeding $225 thousand. Em-

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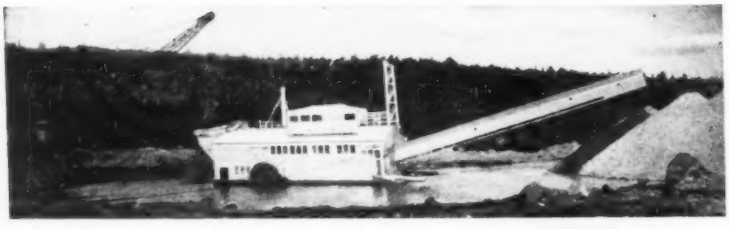

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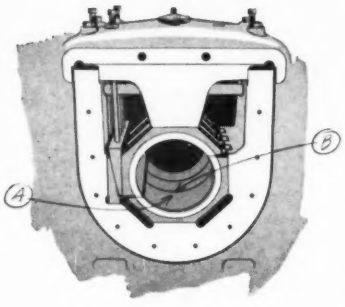

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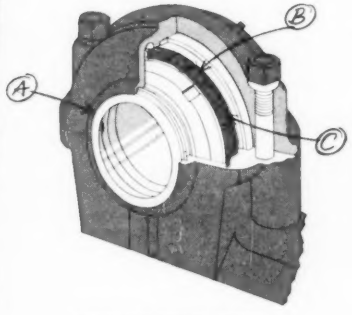

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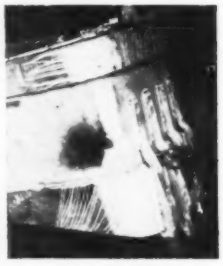

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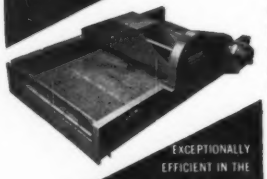

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WORLD'S MINERALS
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pire Star operates the *Empire* and *North Star* properties at Grass Valley and the *Dannebroge* gold mine in Browns Valley, Yuba County. In recent months lessees are reported to have developed high-grade ore on the 700′ level of the Empire which is now being milled. The Dannebroge shaft which was reopened several years ago at the Browns Valley property continued to produce fair grade during the year although development work failed to disclose any new ore.

What is described as an extensive chromite deposit, 30 miles northeast of Crescent City, California, has been leased by the *Chromium Smelting Corporation* of Spokane, Washington, from its discoverer and owner, Edward Carlson. Disclosed near the surface by the removal of overburden with a bulldozer, the orebody is 50′ in width and has been exposed for a length of more than 200′. The ore is said to sample 51 percent chromic oxide.

Having completed necessary road construction to its property, the *National Perlite Company* of Campbell, California, is now mining and shipping perlite from a new quarry face on the Holt ranch near Rutherford in Napa County.

Sonoma Quicksilver Mines Company, operator of the *Mount Jackson* mine near Guerneville, Sonoma County, California, is continuing capacity production activities, employing a crew of 55 for an output of 350 flasks monthly. The mine, which has a rich ore, is currently the largest domestic producer. In size, it is second only to the New Idria which recently suspended operations. H. D. Tudor is president.

The *Thurman Gold Dredging Company* is continuing dredging operations on Clear Creek near Redding, California. The bucket-line Yuba dredge is built on 33 steel pontoons and has a digging ladder with 69 buckets of nine cu. ft. capacity, capable of digging 35′ below the water level. Gold is being recovered in sluice boxes fitted with Hungarian riffles. With a crew averaging 20 men, some 400 cu. yds. are being handled per hour. W. J. Harvey is superintendent in charge of the operation.

It is understood that a rich deposit of uranium was recently discovered in Antelope Valley, Los Angeles County, California. The yellow carnotite, exposed by gopher holes, was said to have registered a maximum of 80 on the Geiger counter.

The old *Baltic* mine, consisting of a placer and two quartz claims, west of Grass Valley, California, is being rehabilitated by Everett M. Newman under a lease agreement. A road has been completed to the Baltic shaft, the shaft has been equipped with head frame and hoist and some good ore is reported to have been encountered.

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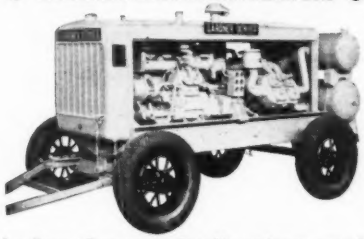

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At the *South Star* gold mine in the Deadman Flat district, Grass Valley, California, Percy Schmidt and R. H. Palmer who are unwatering and retimbering a 300′ shaft have now reached the 125′ level. The operators have installed a hoist and compressor and plan a small ball mill following exploration.

H. B. Chessher and H. L. Hazen, Reno mine operators, have purchased the *Central Comstock Mines Corporation*, with operations at Virginia City, Nevada. C. L. Hazen will be superintendent in charge of milling operations.

Rosco Wright, operator of the old *General Thomas* mine in the Lone Mountain district, northwest of Goldfield, Nevada, is now sinking a winze from the 150′ level, following a vein which he reports to be eight ft. in width. Values are in lead, zinc, silver, gold, and copper. Wright is also installing a 30-ton bunker and will begin breaking ore as soon as a smelter contract can be arranged whereby he is not penalized for the zinc content.

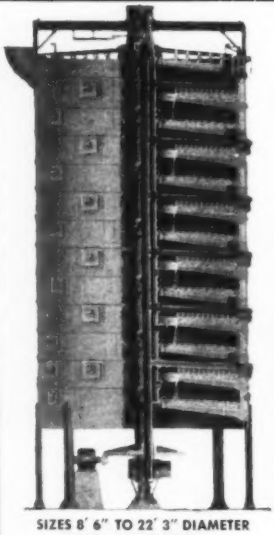
Underground workings of the old *Reveille* lead mine in the Ely mining district of Nevada are being rehabilitated by Fred Farnsworth and Wayne Cole, preparatory to a program of active development work. According to Madison Locke, one of the property's owners, three 50-ton shipments averaging $40 a ton in lead and silver were trucked to a Utah smelter before the first of the year. He said that shipments will be resumed as soon as weather conditions permit. Farnsworth and Cole have taken the property over on bond and option.

The *Consolidated Eureka Mining Company*, operating at Eureka, Nevada, is now exploring the area of its property north of shaft No. 1, which produced substantial lead-silver tonnages in earlier operations. Present work is reported to be centered around the Banner Fissure.

Charles Joseph, Louis Cirac and John Klaus have taken over on a long-term lease the gold-silver property of the Reno firm, *Tonopah Divide Mining Company*, and are going ahead with preparations to put the mine on a steady production basis. Regular shipments are expected to get under way shortly by the lessees and three sets of sublessees, all of whom are breaking and hoisting shipping grade ore at the present time. The mine, which is six miles south of Tonopah, in Esmeralda County, is fully equipped with hoist and compressor and other mining facilities and has been developed to a depth of 1,445′.

A large-capacity gravel screening plant was recently completed in Reno and is now being moved to the placer property of *Constant Minerals Separation Process, Inc.*, 55 miles north of Lovelock in Pershing County, Nevada. According to Maurice Constant, president and manager, this is the first of a number of portable plants the company plans to provide for its large-scale operations. The company's holdings include 5,000 acres in Nevada and an additional 1,000 acres in Montana.

Gus Rogers, general manager of the *Winnemucca Mountain Mines Company*, Winnemucca, Nevada, reports that the company will acquire additional mining equipment in 1949 to more than double former production. The firm's immediate program calls for completion of the 100-ton concen-



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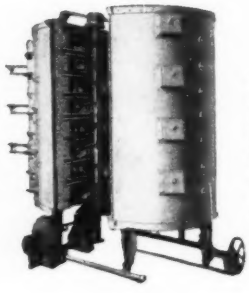

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tration and amalgamation plant, continuation of the main 5,000′ haulage tunnel and providing a stockpile of milling ore sufficient to supply the new mill for a year's operation. An additional 120 acres adjoining the company's property was recently acquired.

W. J. Loring, president of the *Nevada Uranium Production Company*, Tonopah, reports that equipment is now being purchased for the firm's uranium-bearing claims near Round Mountain which it acquired under lease and bond from Heneberg Brothers several months ago. The equipment will be installed in the 320′ tunnel where the associates wil sink a winze at a point where uranium values are most pronounced. Recent checking of the tunnel is said to have disclosed radioactive mineralization for the entire 320′.

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NEW MEXICO

A new 250-ton capacity mill has been installed at the *Pershing* mine, an open-pit operation in Lincoln County, New Mexico. Included in the equipment are a 5 x 10 ball mill, classifier, five 50-ton amalgamators and Wilfley tables. A new coarse ore bin and fine ore bin sufficient to maintain operations in bad weather also have been constructed as well as additional housing and a power plant. Ore from this operation averages $6 a ton in gold and silver.

A. C. Bohrnstedt, president of *Cooperative Mines, Inc.*, La Madera, New Mexico, reports that construction of a modern mica cleaning, processing and milling plant, started by the company last September, is nearing completion. The new plant will handle ores from the company's mica properties in the Petaca mining district of Rio Arriba County.

Construction of a 50-ton mill this spring is planned by the *Continental Engineering Company* of Carrizozo, New Mexico, to handle custom ores as well as the firm's low-grade ores. The company is developing two properties in the district at present: At the *Conqueror* lead-copper mine, the main shaft is now being sunk to the 220′ level, preparatory to drifting under two of the main vein systems. At the *Water Canyon* mine, work is getting under way to drive a tunnel to cut a large vein at 400′ depth. C. E. Degner is company president.

Mineral Resources Corporation, which has been developing the *Hornet* group of claims in Cabresto Canyon, Taos County, New Mexico, for the past six months, is reported to be contemplating construction of a flotation mill at the property. According to J. L. Monson, president and general manager, and C. A. Hervert, superintendent of operations, a substantial tonnage of ore, assaying more than $35 a ton in lead, zinc, gold, silver and manganese, is now ready for shipment to the smelter. In addition to the Hornet operation, the corporation has extensive mica holdings in the Ojo Caliente mining district, development of which will be undertaken when tests, now being conducted on mica-feldspar separation, are completed.

Changes in Columbia Steel Personnel

The appointment of M. H. Freedman as Division Manager of the Pacific Northwest Division of Columbia Steel Company, subsidiary of United States Steel Corporation, was announced by the company recently. Columbia's newly created sales division will comprise the states of Washington, Oregon, and Northern Idaho.

At the same time it was announced that C. C. Johns will be Manager of Sales at Portland, Oregon, and Ralph Winship will be Manager of Sales at Seattle, Washington.

New Appointments For American Brake Shoe

Philip H. Clapp, Jr., formerly Sales Representative, has been appointed Sales Manager of the Engineered Castings Division of the American Brake Shoe Company, according to an announcement by N. George Belury, Division President.

Maynard B. Terry has been appointed vice-president of the American Brakeblok Division of the American Brake Shoe Company, according to an announcement by W. A. Blume, division president.

WEMCO Licenses South Africa Mfg. Firm

Western Machinery Company, San Francisco, has recently completed negotiations for a licensing arrangement with Fraser & Chalmers (S. A.), Ltd., of Johannesburg, South Africa. Under this arrangement, the Western Machinery Company has assigned manufacturing and sales rights for Wemco products in the territories of Union of South Africa, Northern Rhodesia, Southern Rhodesia, Tanganyika, and the mandated Territory of Southwest Africa.

According to the announcement made by H. N. How, President, Western Machinery Company, special emphasis will be placed on the manufacture and sale of Wemco S-H Classifiers and Wemco HMS Densifiers.

Castle Dome Will Get Five of These

Shown here is one of a fleet of five huge dump trucks which recently rolled off the assembly line of Kenworth Motor Truck Corporation, Seattle manufacturers of trucks and buses. The trucks were bound for the Castle Dome Copper Company, one of the largest copper mining operations in Arizona. Powered with a 275 horsepower NHBS-Cummins super-charged engine, each dump truck has the ability to haul approximately 30 tons at a time. The trucks are equipped with the special front axle of the new Timken series FU 900, having a capacity of 25,000 pounds. Because of their tremendous size, the trucks were driven on the highways to their destination.

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LeTourneau Adds Three New Tools to Line

R. G. LeTourneau, Inc., has announced addition of three new tools to its line of earthmoving and materials handling equipment; namely, the E-35 Tournahopper, E-40 Tournarocker, and the E-25 Carryall Scraper.

For bottom-dump hauling, LeTourneau is offering the E-35 Tournahopper, a 27-yard or 35-ton capacity unit which will travel at speeds up to 30 mph. It is powered by a 240 hp., two-wheel prime mover, and has multiple-disc 4-wheel air brakes which provide 5,135 sq. in. of braking surface.

The E-40 Tournarocker, a rear dump wagon, is also powered by a 240 hp. two-wheel prime mover. The E-40 Tournarocker has a 41 cu. yd. capacity and a rear dump which is multi-cable controlled by an electric motor which tips the body beyond vertical position for fast dumping. Drive wheels are up front where they can pull the rig forward quickly in an emergency.

Also taking its place in the LeTourneau line is the E-25 Carryall Scraper, also powered by the 240 hp., two-wheel prime mover. Being supplied because of contractor demand, this Tournapull - Scraper possesses fingertip electric control, positive power steer, Tournamatic differential, more flotation and sure-footed traction.

Of added interest in connection with these tools is that all three—the E-35 Tournahopper, the E-40 Tournarocker and the E-25 Carryall Scraper—are interchangeable with the same 240 hp. two-wheel prime mover.

Complete information on these earthmoving and materials handling machines may be obtained from MINING WORLD, 121 Second St., San Francisco 5, Calif.

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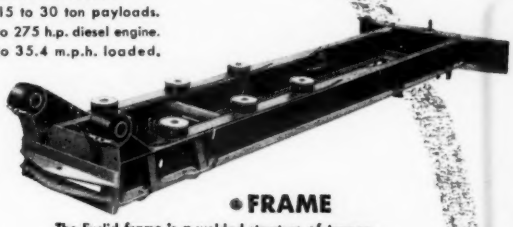

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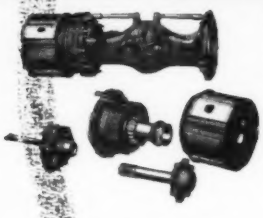

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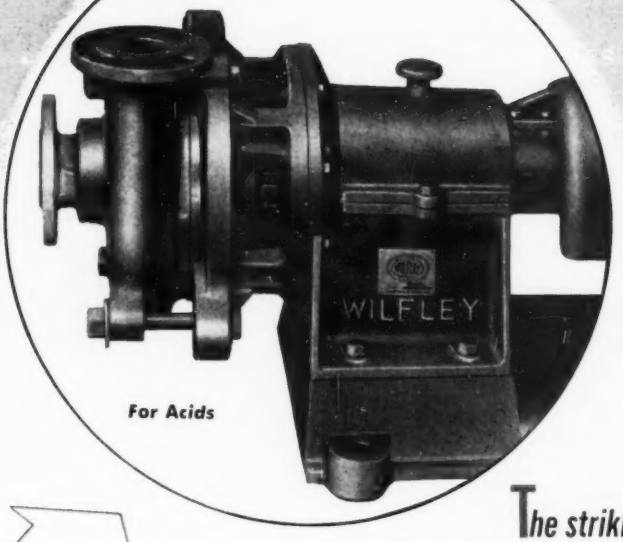

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